

University News

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C.T. BHUNIA

Higher Education
—Restructuring and Productivity

H.L. VERMA

**Protection of Intellectual
Property Rights**
—Supportive Legal Framework Needed

JAYANTI DUTTA

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Higher Education Restructuring and Productivity

C.T. Bhunia*

Introduction

The world is in transition from the industry-based and regional or national-based society of 19th-20th century to a knowledge-based and "one world one village" or global society in 21st century. This is the advent of the information technology era that is due to the convergence of the computer, communication and electronics technologies. In the 21st century, knowledge will be the key, and the fundamental sources of wealth will be knowledge and information rather than raw materials and labor. The *UNESCO Courier December '98* issue noted : "A two-kilo cake contains twice as much flour, eggs and sugar as a one-kilo cake. A cake can only be eaten if it's within reach of hungry hands and mouths, and once it's been eaten it's all gone. A copy of a computer program, on the other hand, only has a marginal cost, that of its physical support or its transfer. Internet users thousands of kilometers away from each other can 'consume' it simultaneously. And it doesn't wear out when it's been used. This comparison encapsulates the difference between the industrial economy and the 'knowledge economy', which is also known variously as the 'intangible economy', 'the weightless economy', the 'immaterial economy' or simply the 'new economy'. In this economy, ideas, images and knowledge are more prominent than physical products, machines and raw materials. Just as harnessing energy spawned industrial society, so mastery of data processing and transmission has given rise to the knowledge economy. It is particularly strong in four leading sectors : information and communication technologies; intellectual property-patents, brand-names, advertising and financial services; databases and recreational services; and biotechnology." It is often said if we can transport lots of bits so easily and so quickly and so economically, there is no need to transport raw materials and physical labor. Kevin Kelly wrote in his article "New Rules for the New Economy" published in the *Wired* magazine of USA that "The Law of Displacement : materials are displaced by information, mass by bits, the old economic dynamics by network behaviour." Measuring of the economic value of knowledge is still a complex job and a big challenge. But some works have been done. In 1962, Fritz Machlup (*Gerardo et al, 1999*) of USA, based on 1958 data, concluded that 34.5% of the Gross National Product in the United States could be allocated to the information sector. Some other reports from USA say : (a) in 1977 information sector was 25.1% of the Gross Domestic Product and generated 43% of all corporate profits, and (b) in 1992 information technology and communications sectors had grown to 10% of the Gross National Product. A work reported that information may be treated as a fundamental unit of nature. Tomorrow the industry will be knowledge industry where knowledge workers may be quite expensive but the most expendable of all. A report (*Constantine N. Anagnostopoulos et al, 1998*) says : "Education seems more closely tied than ever to an individual's economic success, according to a 1996 study

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by Frank Levy, Professor of urban economics at the Massachusetts Institute of Technology (MIT), in Cambridge." Commenting over the Knowledge Society, Peter Drucker wrote (*Yashwant Deva*, 1998) : "The leading social groups of the knowledge society will be knowledge workers and knowledge executives who know how to allocate knowledge to productive use, just as the capitalists knew how to allocate capital to productive use... Yet, unlike the employees under Capitalism, they will own both, the means of production and the tools of production." Daniel Bell proposed that "the crucial point about a post-industrial society is that knowledge and information become the strategic and transforming resources of the society, just as capital and labor (sic) have been the strategic and transforming resources of the industrial society." This being the position, the slogan or the *mantra* (*Gerardo et al.* 1999) for competitive advantages shall be : (1) "Innovate, Seize the opportunity and Change the rules," and (2) "Learn faster than your competitors." *Innovation and Rapid Learning* are the pillars of 21st century. This needs a national "transformation process that is revolutionary in result, but evolutionary in execution."

The *mantra* of getting competitive edge in the age of liberalization and globalization is "Lead or Follow." Those who want to be follower, they shall continue to remain so years after years. This is because of the simple law of competition that a follower or a borrower country can never get front running technology from the country of export, what they at best can expect is nothing but near obsolete technology and systems. Therefore going for "lead" is the best *mantra* of the present days' competitive advantages. Poor countries like India, have thus to go for a "lead" through improved human resources generation in a process of evolution which shall be innovative and rapid. Till today, human generation is not done at factory but at the institutions of higher learning and research like universities, engineering and medical colleges/institutes etc. The speculation of "self-designing beings" who would continue to improve themselves "at an ever increasing rate" (*Stephen Hawkin*, 1995) by the process of machinization of animals is still a mere theory. Under such situations, the reduced budget allocation for higher education, implemented in recent past in many poor countries is not beyond the purview of questions and criticism.

The Case of India

Since 1992, India has taken part in the liberalization, privatization and globalization process. So India needs to improve human resources particularly in technical/higher education and research. But in

international standing of higher education and research, not only India's position is poor but also it is becoming poorer day by day. Irony is that this picture has emerged after India's taking part in liberalization process, whereas this should have been the other way round. There are different parameters to see the position of human resources, like Human Resources Index (HRI) defined by the United Nations Organization (UNO) etc. HRI of course takes care of elementary education and higher education among other things. In terms of HDI (Human Development Index) of 1998 and 1999 India's position was 138th and 132nd respectively out of 174 nations (*The Telegraph*, 1999). For the purpose of higher education and research, we may analyze based on other more appropriate parameters. One such parameter is the number of research publications in the international referred journals. Table (I) lists data (*Tibor et al.*, 1999) of share of publications in the world's total. It is seen that India's position has shifted from 10th position during 1984-1989 to 12th position during 1990-95 with a — 12.61 growth rate over the period. The situation has been further complicated by the budget cut on higher education. The effect is negative one with a chain reaction (fig. 1).

Table-1 : Share of Total World Publication

Country	Share in 1984-89	Share in 1990-95	Growth
USA	36.52	35.82	-1.92
UK	9.21	9.24	0.325
Japan	7.37	8.67	17.64
Germany	6.22	7.42	19.3
France	5.17	5.88	14
USSR / Russia	6.85	4.97	-27.45
Canada	4.66	4.77	2.36
Italy	2.69	3.49	29.74
Australia	2.27	2.40	5.73
Netherlands	2.01	2.40	19.40
Spain	1.21	2.08	71.9
India	2.22	1.94	-12.61

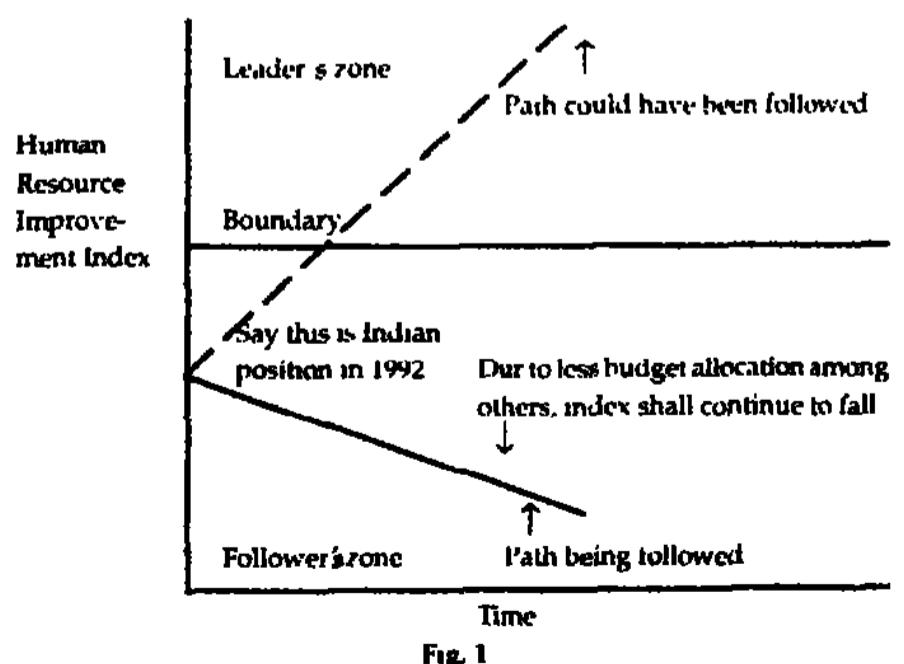


Fig. 1

It is amply clear that India is not following the correct path to become a leader in the world of globalization. In poor countries and therefore in India also, it is often assumed that higher education is costly. Thus state funding of higher education is not appropriate at the cost of other social infrastructure like basic education, health etc. As per Noble Laureate Professor Amartya Sen, any attempt to cut budget for social infrastructure shall be counterproductive, we must not go for that. But we must analyze whether higher education is really costly in India, and if so, what are the reasons for that and must find path to abnegate those reasons. Higher education in India is costly because of the following reasons :

- 1) Indian, and for that matter most or all of the poor countries' education system and structure are copied or borrowed from advanced countries. We have no innovative system and structure of our own to meet our environment and requirements (*Bhunia, 1994, 1995, 1996, 1999*).
- 2) Investment return on higher education in poor countries including India is low.
- 3) Imbalance and improper fund allocation to the institutes.

FARE and SARE

Undoubtedly, we need to have innovative and ours' friendly (in terms of economy, acceptability, operation and affordability etc) education systems and structures. In this regard the concept of Institute cum Industry (ICI), is well documented and surveyed (*Bhunia*). ICI is an innovative proposal mainly on restructuring of institutes and integrated technical education. Here we propose some innovative education pattern. In the present day pattern of education, all the students admitted in any course have to undergo study for a fixed period of time, irrespective of student's ability. Even if a student is able to learn all about the course in a shorter period he is not supposed to do so. Similarly, a less meritorious student is hard pressed by the system itself to complete the course during the fixed time. To overcome the problem and to make our technical education appropriate to the globalization process that needs fast learning, we suggest that for the courses of B.Tech/B.E., we can have two groups :

- 1) FARE — *Fast and Rapid Education*, where Fast refers to time duration and Rapid refers to impact of education. FARE for B.Tech./B.E. after 10+2 may be of minimum 3 and maximum 3.5 years duration and shall be allotted to a group of capable students based on merit and choice.

- 2) SARE — *Slow and Recurring Education*, where Slow and Recurring respectively refer to time duration and impact of education. SARE for B.Tech./B.E. after 10+2 may be of minimum 5 years and maximum 6 years duration and shall be allotted to the less meritorious students.

FARE is for "learn fast" jargon. Now a days the students of NRI category and others on capitation fees are being admitted in technical education, hardly considering the merit. SARE therefore may be an actual requirement.

Investment Return of Higher Education

It is often said that the investment return of higher education is less or marginal. Work of Shanmugam and Madheswaran (1998) reported that "the marginal rates for the college and university studies in India are lower than the returns for below college level studies. Therefore, more investments and higher subsidies on the education below college level would be more beneficial for both the individual and the society than that on higher education." But in this study, only individual income was considered for the calculation of return. In case of higher education more emphasis should be given to the national income than the individual income. For example, an engineer's monthly salary is not the only return, his service in terms of production in the factory, development of techniques and systems (that may be assumed as income of nation through his service) are the major returns. Besides, the same work of Shanmugam and Madheswaram reported that "higher earnings are associated with the higher level of education."

The main reasons for low investment return to higher education are (a) brain drain and (2) non-involvement of professional persons in the policy framing of even project specific matters.

The gravity of the problem caused by brain drain shall minimize if people migrating abroad shall even marginally invest in nation building. Now a days, NRIs (Non Resident Indians) are participating in the national projects and development. This is encouraging. At the same time, we have to do something at least to reduce brain drain if not stop it fully. It will be pertinent to mention here a report of the *IEEE spectrum* (*Nancy, 1994*) that higher degree holders are more innovative in nature. Higher perks and pay, and freedom in work place of professional persons are the major issues need to be considered seriously to reduce brain drain.

Non-utilization of professional persons in policy

making is serious in nature in poor countries. Due to this, professional innovation and inventions are on decline in these countries, causing lower investment return to higher education. We quote here Said (1999) about academic freedom "Only there could collective learning and the development of knowledge occur and, as in recent years we have discovered, it could occur only if academic freedom from non-academic authority was somehow guaranteed and could prevail."

Regarding the last problem we have to note that none of Sir J.C. Bose, Acharya P.C. Roy, Professor S.N. Bose, Dr. Meghnad Saha, Homi Bhabha and Sir C.V. Raman among others was a product of any of today's preferred institutes of any kind. It is people who should be chosen and it is data and figures which must be considered rather than particular institute or organization for allocation of budget and funds for research and development. Our prolonged exercise and experiments in the fashion of giving priority by prejudice and preference have proven to be of marginal success only.

Measuring Productivity of the Institutes

In order to judge the quality and the capability of the institutes we often do mistakes by seeing the products rather than productivity. Some institutes claim superiority on the basis of the export quality production of engineers. But at what input they do so? Productivity which is the output divided by the input, is the appropriate parameter for assessment of the institutes. We define below two productivity factors for assessment :

a) *Productivity for human resources production*

$$= \{[(\text{Average number of passed out students} - \text{Average number of unemployed students of the lot} - \text{Average number of brain drain of the lot}) * \text{Average yearly income per student}] + [\text{Average number brain drain} * \text{Average yearly donation or investment made by a brain drain}]\} / \text{Average yearly spending for education.}$$

b) *Productivity for research production*

$$= \{\text{Average number of publications in referred journals/Conferences} + \text{Average number of patents}\} / \text{Average yearly spending on research.}$$

The above defined two parameters may be used for distribution of budget and funds to the institutes.

Conclusion

Any move to limit higher education and research by any means shall be counterproductive for growth

and prosperity of the nation. The argument that poor countries should not and cannot bear the high cost of higher education, and that too at the expense of elementary education and basic health etc is good to hear in the first instance. The proper analysis of this argument and whether higher education is really costly and if so what are the reasons behind that need to be examined before taking a decision. A critical review of these things has been attempted the conclusion reached is that poor countries should restructure higher education in terms of I-C-I, FARE and SARE; and take some policy decision to use the products of higher education in national planning and to reduce brain drain. Criteria for distribution of funds to the institutes of higher learning and research by a parameter of productivity of the institutes rather than their products and image etc has also been proposed. It is believed that suggestions made in this paper are in conformity with the tenet "think globally, act locally" which is often taken as the way of going with liberalization. Reducing higher education in poor countries shall be a first suicidal step in the age of open economy and information revolution.

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Protection of Intellectual Property Rights

Supportive Legal Framework Needed

H.L. Verma*

The economic growth of any country these days depends primarily upon the availability of technology. The contribution of the other factors of production like labour, capital etc, in economic growth, as emphasized by neo-classical theory, have steadily declined in the present era of open market system. Had the neo-classical economic powers in the world today. It is not so. Only technologically advanced nations are dominating economically these days. With limited resources available at the disposal of a nation it is suggestive and logical during current times to seek economic growth through technology transfer. The trend is emerging in this direction in the world economy. We can find a number of cases of inter-dependence of nations in trade and technology. At individual business unit's level, strategic alliances in the form of mergers, amalgamations, joint ventures, cooperative R&D agreements, etc, are proliferating, cutting across national boundaries and cultures just to take advantages of each other's technologies and knowledge base. In the fast changing economic scenario the importance of intangible assets as compared to tangible asset in business has increased. In the areas of international trade, foreign direct investment, and business alliances, the most prominent consideration these days is the protection of intangible assets, more specifically the intellectual property rights.

IPR and TRIPs

Intellectual Property is described as the product of human intellect. When an individual through creativity and inventions creates something new and useful it is accorded the status of property, which like other property items can be sold, bought, hired or licensed. The right of the inventor to that property is called Intellectual Property Right (IPR). IPR is the exclusive right granted to its holder as a reward for his/her private initiative. If an invention cannot be protected against being copied or pirated, the situation will hardly be conducive for creativity. To encourage creativity and inventions for better utilization of resources in the world, protection of intellectual property is desirable. Intellectual Property Rights of individuals, organizations, and a nation are protected through different devices. These devices include patents, copyrights, trademarks, registered

designs, layout design of integrated circuits, geographical indicators and contractual licenses. These devices are much in talk these days.

The Trade Related Intellectual Property Rights (TRIPs) is a comprehensive treaty formed after detailed discussions on IPR held at an international forum constituted for multilateral trade negotiations. The said treaty provides the norms and standards for protection of intellectual property during trading transactions. The TRIPs is the outcome of eight rounds of discussions held under General Agreement on Trade and Tariffs (GATT) by its member nations. Now TRIPs stands adopted by the majority of nations in the world. Its total membership has gone upto 136 nations. It is one of the major developments of the present century having far reaching implications for world economy. To understand its implications for the member nations, it is better to first go into the background of its evolution.

To reshape the World Economy after Great Depression (1929-32) and the Second World War (1939-45), the GATT was set up on 30th October, 1947 at Geneva (Switzerland) with an initial membership of 23 countries. It became operative with effect from 1st January, 1948. The GATT was a sort of ad hoc body created for the purpose of carrying out multilateral trade negotiations among members. Upto the year 1993, eight rounds of negotiations were completed

University News

Wishes

Its Readers

A

Happy New Year

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under the GATT arrangement. During the intervening period of GATT's life it has made some remarkable achievements in the form of increase in membership, export growth, imports tariff reductions and increase in the volume of international trade. The first seven rounds of talks held under GATT were of short duration with specific agenda focused on tariff reductions and other minor issues. However, the eighth round that was conducted at Uruguay from Sept. 1986 to Dec. 1993 was the most comprehensive one and touched almost all issues concerning international trade. On Dec. 20, 1991, the then Director General of GATT, Arthur Dunkel, prepared a comprehensive document of 433 pages making series of proposals in as many as 28 areas concerning international trade. This document is popularly known as 'Dunkel Draft' and became the basis for all further negotiations. The Dunkel Draft initially roused lot of controversies particularly in developing countries including India, but finally it was accepted and 117 countries put their signatures to Uruguay Final Act in Marrakesh, Morocco, on 15th of April 1994. India was one of the signatories to this treaty.

As an outcome of the eighth round of GATT, the World Trade Organization (WTO), a permanent legal institution as a replacement to GATT, came into being and became operative with effect from January 1, 1995. The WTO assumed the role of a watch dog of world trade with the objectives of encouraging the growth of the most competitive locations to produce goods and services, thereby, ensuring the most efficient use of global resources. The other key areas on which agreements were finalized at the conclusion of the eighth round include Agricultural sector, Tariff levels, General Agreement on Trade in Services (GATS), Agreement on Trade-related Intellectual Property Rights (TRIPs) and Agreement on Subsidies and countervailing measures. Thus, TRIPs evolved as one of the measures to regulate world trade. India has signed this agreement. Now, implementation of the provisions of TRIPs is one of the key concerns of the WTO. India in the present situations is left with no option but to take necessary measures to comply with the requirements of the provisions of TRIPs to keep pace with the rest of the world and take maximum possible advantages out of it.

The Present Position

India's present position with regard to compliance with the provisions of TRIPs is not very encouraging. She needs to act fast and take a number of steps in this direction to make possible achieving a driving seat in international trade and ensure overall economic growth in the times to come. Our economic history reveals that India so far emphasized on reverse engineering, adaptation and transforma-

tion of existing technologies for industrial growth. With such growth strategies, a relatively loose system of protection of IP worked and remained beneficial. The conditions in many other developing countries too on this front are similar to that of India i.e. weak research capabilities but strong industrial proficiency to exploit ideas. The economic scenario now has altogether changed. Copying the foreign innovations is no more possible and rewarding. In order to attract direct foreign investment and encourage transfer of technology and business alliances, we need to assure our prospective foreign partners the protection of their intellectual properties. At the same time emphasis on strengthening our own R&D base and development of a solid legal framework for fair play in international trade are needs of the hour.

India's current position with regard to status of legal framework on IP protection devices has been discussed as under :

Patents

A patent is a legal monopoly granted for a limited time to the owner of an invention. Patent rights are granted by the State. Such rights can be withdrawn by the State under certain conditions even after grant. Further, there is no such thing as world patent.

Patent rights in India are granted and protected under Patent Act, 1970. The Act offers protection for Product Patents for a period of 14 years. However, in the areas of food, chemicals and pharmaceuticals there are provisions for Process Patents only and that too for a period of 7 years. These norms provided in the Act considered below the world levels. There is international pressure on us to amend our Patents Act to bring it to the international standards. India has been allowed a period of ten years i.e. up to January 1, 2005 to adjust to the new patenting regime. Till then we have been allowed to provide 'mail box' facility to all applicants for product patents and grant them exclusive marketing rights (EMR) for a period of five years. The necessary amendment in the Patent Act to provide these facilities has been carried through this year. Surprisingly, it took more than four years to pass this amendment in the Parliament. To protect the rich and diverse natural resources of the country, India needs to act fast and create adequate legal framework on patenting. In the absence of such a legal framework the problems like patenting the 'Neem Oil', 'Haldi' and 'Basmati Rice' by USA Patent Office, the items which are of Indian origin, would continue to bother us. This is the minimum, the country should do at the earliest.

Copyrights

Copyrights are granted for literary, dramatic, musical, artistic, cinematographic film and sound-

recording works. Computer programming and software works are covered in the category of literary works only.

Copyrights in India are granted under the Copyright Act, 1957, as amended in 1983, 1984, 1992 and 1994 and the Copyrights Rules, 1958. It is interesting to point out that India's copyright laws are quite exhaustive and are in tune with the requirements of TRIPs. India has also set up a Copyright Enforcement Advisory Council to strengthen the enforcement of the rules. The period for which copyright remain valid varies from work to work. For literary works the copyright validity period is the whole life of the author plus sixty years if work is published during the life time of the author. For sound-recording the copyright is for a period of twenty five years and for the remaining category of works, the period is again sixty years.

Trademarks

Trademark is a visual symbol maybe in the form of a word, device, name, brand, numeral signature or any combination of these, used in relation to goods to indicate a connection between the goods and the proprietor or registered user of that trademark. The benefit of trademark is that it helps distinguish the goods as regards their manufacture or quality from similar goods dealt by other firms.

Trademarks in India are granted for a period of seven years at one time. They are issued under the Trade and Merchandise Marks Act, 1958. The current statutory provisions for the protection of Trademarks in India are considered highly inadequate by the developed countries. To bring India into alignment with the requirements of TRIPs, the existing Act needs to be amended. Another anomaly in the existing Act is that it does not protect the Service-marks, whereas court rulings speak in favour of this protection. The new/amended Act should also take care of this anomaly.

Designs

A design refers to the features of shape, configuration, pattern or ornament applied to any article by any industrial process, which appeals to the eyes. A design is registered only if it is new or original. The Design Act, 1911, governs the registration of design in India. The articles with registered designs are marked 'Registered' alongwith registration number. This Act being very old is outdated and needs replacement.

Other Devices

For other IP devices like layout design of integrated circuits, geographical indicators and contractual licenses, there are no legislations for protection

of innovators' rights. These areas remain uncovered without any framework. An immediate action on the part of the government is desirable to provide legal cover in these areas.

To conclude, it may be said that India is carrying on with the inadequate legal framework for protection of intellectual property rights as compared to the developed nations and requirements under TRIPs. No provisions exist for granting product patents for major industries like foods, chemical and pharmaceuticals. Number of new legislations need to be enacted and the existing ones suitably amended. To encourage foreign collaborations, inflow of foreign capital and technology, and to build an environment of trust and confidence among market players, prompt actions in this direction are called for. Any lethargy on this front may prove very costly for the economy as a whole. A national consensus be created on such sensitive issues which have far reaching implications for the economy of the country. Increased public awareness can perhaps better help the process of consensus formation. To make optimum utilisation of the human capital, which India possesses in abundance, an immediate action in the form of updating the required supportive legislative framework for protection of intellectual property rights is required. □

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CORRIGENDUM

Applications or nominations were invited for a tenure post of chair Professor in the area of Banking and Financial Services as published in this weekly on 6.12.99.

The last date of sending applications/bio-data for the above mentioned post are hereby extended from 26.12.99 to 13.01.2000.

All other conditions shall remain unchanged.

Academic Staff Colleges As Nodal Centres for Academic Excellence

Jayanti Dutta*

Academic Staff Colleges are no more unknown institutions working discretely in remote corners of various universities. Now, after more than 10 years of their inception — there are 43 ASCs all over India, providing in-service training to college and university teachers. These colleges have highly competent core staff and are using innovative methods to achieve the objective as laid down by the UGC. Reviewed by the UGC from time to time, most of the ASCs are able to achieve the objectives of — orientation, motivation and empowerment of teachers — to a fairly satisfactory extent.

Infrastructure for these establishments is provided by the respective universities. Otherwise these are fully sponsored by the UGC. A lot of investment in the form of time, money and energy goes into running the ASCs and organising different courses. Presently, activities of the staff colleges are limited to organising Orientation Programmes for newly inducted teachers and Refresher Courses for experienced teachers (some staff colleges also publish newsletters). However, with a little initiative, imagination and small funds the ASCs can be further exploited to become living centres of academic activity within its present framework. By catenation of events this could lead to an effective and long term positive impact on the teacher-participants which has direct bearing on enhanced teaching effectiveness.

The suggestion is for the ASC to work as

- Educationist-society interface
- Academic activities centre
- Bulletin-board for career opportunities
- Platform for issues of social concern
- Databank.

As Educationist-Society Interface

It has been acutely felt time and again that academicians work in isolation, unaware of the vast range of problems faced by the society and

are indifferent to apply their findings to solve the problems. Vice-versa the society is also not sensitive to the ideas and concepts generated by the educationists. It is more so because we lack a forum where the two segments can meet face to face and interact for a healthy and dynamic growth. ASC could easily be developed as an interface for educationist and society. Here, frequent and uninhibited mingling of representatives of higher studies-institutions can take place with members of society — parents of students, school teachers, experts from fields outside education like industry, agriculture, science, technology, management, media and the like. This interchange is bound to enrich the academicians as they are able to identify the needs and requirements, gaps and lacunae in the society and get motivation for handling them.

As Academic Activities Centre

Desire to update their present knowledge or to get new knowledge exist in most of the teachers, even if it is not mandatory for their career advancement. ASCs can tap this demand by organising 2 or 3 day short courses on educational technology, information technology, computer literacy or specific themes in different subjects. Beside 1-2 days workshops for question framing, evaluation, tackling classroom problems, managing co-curricular activities etc can also be conducted. As ASCs are already supported by knowledgeable resource persons, it will not be difficult to start such courses. In some cases, sponsorship can be obtained from corporate houses also.

As Bulletin Board for Career Opportunities

A large number of teachers in rural and semi-urban colleges remain ignorant about various plans, programmes of the UGC and other organizations providing opportunity for research, higher studies or other proposals because the information never seeps down to these colleges from the central institution. ASCs can serve as a bureau where such information/guidance can be provided to the teachers. Likewise information about training programmes, seminars, symposia being held all over the country can also be circulated

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through the ASC. Since every teacher has to visit the ASCs after his/her induction, he/she will automatically come to know about the facility and later use it when required.

As Platform for Issues of Social Concern

Government spends lakhs of rupees on making the public aware about important issues of social concern, for examples, health related issues, family and child welfare, issues like women empowerment, child labour, drug-menace etc. Even then it is difficult to reach remote areas and impress their significance on young minds in their own language. ASC can be developed into a nodal centre for starting and spreading awareness campaigns first among the teachers with the teacher acting as the starting point of the chain reaction. This sensitization is later bound to replicate in hundreds of colleges in remote corners of the country among thousands of young students.

The curriculum of the Orientation Programmes provided ample scope to introduce these topics in the schedule. However, the discussions need to be more action oriented and provide practical wisdom otherwise there is the chance of the

sessions becoming a monotonous propaganda with no penetration.

As Data Banks

ASCs can also prepare a data bank of service graphs of all the teachers working under affiliated colleges of that particular university. The purpose is to use it as a baseline data for further strategies on staff development. This data bank can also be referred to by different institutions for monitoring, planning academic activities and thus enhance efficiency. This can be done easily with the help of computer networking. Most of the ASCs already possess computer to assist in the data processing part of the working of colleges.

Staff induction is an important aspect of any education system. Since a fairly well developed platform for this purpose already exists in the form of ASC, it will be wise to use it as a centre for generating an intense academic atmosphere not only in the universities but also in the farthest colleges in the country. It will encourage original thinking, bring professionalism into the system and enhance the quality of higher education — all without putting further burden on the infrastructure or financial resources. □

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY BANGALORE-562 157

Sir M.VIT is named after Barath Ratna Sir M. Visvesvaraya, a great Engineer statesman and an able administrator and was started in the year 1986 by a group of philanthropists belonging to Raju Kshatriya community under the Banner of "Sri Krishnadevaraya Educational Trust".

The Institute is situated on Bangalore-Hyderabad National Highway at a distance of about 21 Km from the city of Bangalore. The College is located in a spacious campus of about 135 acres, having green, clean and peaceful atmosphere conducive to learning. The College runs the following courses which are affiliated to either Visveswaraiah Technological University OR Bangalore University.

<i>Course</i>	<i>Intake</i>	<i>Course</i>	<i>Intake</i>
1. B.E. (Civil)	: 30	5. B.E. (Electl. & Elns)	: 60
2. B.E. (Mech)	: 90	6. B.E. (CSE)	: 60
3. B.E. (IE & M)	: 30	7. B.E. (IS & T)	: 30
4. B.E. (Elns. & Commn)	: 90	8. MCA	: 30
5. B.E. (Telecom)	: 40		
			Total : 460

The Institute has TWO Boys' Hostels and ONE Girls' Hostel. Subsidized Transport facilities are provided for the students to commute from various parts of the city. The Institute offers various incentives for meritorious students in the way of Full Freeship, Half-Freeship, Prizes and additional Laboratory facilities etc. It has well equipped Library which is provided with both E-Mail and Internet Facilities. The campus has 24 Hours Water Supply and Electrical Supply provided by Bore-Well and Diesel Generator Sets.

The College has a Training and Placement Centre, ISTE Chapter, Canteen, Bank Facilities and also provides Medical Care to the students and Staff. The Institute has an excellent Sports Complex, which provides both Indoor and Outdoor Game Facilities. It is shortly going to be placed on Web Site.

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Need for Restructuring of Course in Physical Education

S.H. Deshpande*

Physical education in this country has remained neglected and if any attention is being paid, it is in step motherly manner. This is one of the significant causes as to why we are lingering back in the field of international sports.

History of starting of professional training in India dates back to 1920 when the YMCA opened its first college at Madras. It was since then the word physical education made known to the people. Then after during next two decades a few colleges of physical education were opened in the country offering one year post-matric CPED Course and one year Post-graduate Diploma Course (DPEd). After Independence, it was upto the year 1956 no further development was noted, except for adding a few more colleges.

New Era — or Illusion

The Central Government had created an Advisory Board in the year 1954 to advise the Govt. on the matters of promotion of physical education in the country. The Board had formulated the norms and guidelines for imparting quality education to the physical education teachers. The Board had also prepared syllabus of physical education for school children. It had evolved National Physical Efficiency Drive. The Board had also recommended to the Govt. of India to start a full-fledged College of Physical Education to run three years degree course (BPE) and two years P.G. Degree Course (MPE) with the object to impart qualitative training of longer duration to would-be physical education teachers. Syllabus of the said course was prepared and the college started functioning at Gwalior from the year 1957. To commemorate the memory of heroin of 1857 war of Independence, the college was named after Rani Lakshmibai of Jhansi, as Lakshmibai College of Physical Education. Subsequently, from the year 1962, the P.G. Course (MPE) was also launched. The college was given full freedom for its development. Quality education was imparted to the students. New leadership in the profession was emerged through this college.

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Old Pattern — Hard to Die

It was anticipated that with the starting of Lakshmibai College of Physical Education at Gwalior and thereby effectively running 3 years degree course, the old pattern of courses of shorter duration would gradually disappear and this new pattern would be welcomed every where. But, surprisingly the old pattern not only survived but was received with enthusiasm extensively all over. The university and private managements of educational institutions instead of going for new pattern, have picked up this old one and within a short duration a wild growth of the colleges of physical education and the Departments of P.E. in the universities was observed specially in the states like Maharashtra, M.P., Karnataka, Gujarat and a few more states. This has resulted into lowering down the standard of teacher training in the country. Running of a college of physical education has now become a lucrative and money minting business for many individual politicians and institutions including some of the universities. The State Government as well as the university authorities have failed in controlling this mushroom and sub-standard growth of such training colleges.

The old pattern was thus found more economical and so much paying that no body wanted to part with it. On the contrary, the 3 years degree course and two years masters degree course were not cared for and therefore found relegated.

Harmful Fallouts

The very fact of non-appreciation of the new pattern of teacher training in physical education reflects upon lukewarm attitude of the educational authorities and the Government towards physical education. Lakhs and lakhs of our school children all over the country are deprived of their legitimate birthright of playing. Thousands of our younger ones in a city do not even touch the ball or hold bat or the hockey stick. Concept of motor education and its significance in the development of the child appears not perceived by the so called educational authorities of our place. They know only how to burden the child with books and note books. The classroom education is found unpalatable and indigestible to majority of our school children and that is why the 70% students meet fail-

ure in SSC or HSSC Exams every year in each state.

Even after having experience for the years persistently lower standard of SSC results the authorities do not agree to bring any change in the existing pattern of school education.

It is a known fact that our nation do not get international standard sportsmen from our school stock. This backlog of sport education at school level affects collegiate sport, too. Standard of our intervarsity sport is not appreciably high. It is comparatively far lower than many of other countries. Rate of participation in inter collegiate or intervarsity sports is also not showing any positives trend. The students passing out of schools or colleges try to seek admission to various courses. Some of them come to the training of physical education in the colleges, only when they are rejected admission to D.Ed., B.Ed. or other courses. It is observed that the students of lower strata-economically, academically as well as physically easily seek admission to the colleges of physical education. Sub-standard and inadequate teaching and training facilities at such colleges add very little in these students. Their competencies and capabilities for ideal teachership cannot be developed any further. Some how or the other they manage to pass the exam and get their authentic document which qualifies them for teachership. Strength of such immature, incompetent and unemployed teachers is unfortunately and alarmingly increasing in the country.

This deadly fallout of short-sighted planning of our authorities has become head-ache for the respective State Govt. and universities.

Ray of Hope — NCTE

National Council for Teacher Education has come into existence by the Act of Parliament in 1994 for monitoring the standard of teacher education in the country. The Council has since then started functioning effectively. It has evolved norms of teaching and training facilities and other infrastructure requirements. The Council has brought binding on the State Governments as well as universities in keeping the teacher training colleges and university teaching departments as per the norms and standards laid down by it. The Govt. authorities and universities, too, are cooperating the Council in this exercise. Hope, this bond of cooperation would certainly bring some positive and qualitative changes in our existing teacher training programme.

The Council is, no doubt, by an Act of Parliament a very powerful agency but ultimately it is also man-

aged by the people of varied interest. It has to rely on the people from the field of teacher education. The courses like D.Ed., B.Ed. or M.Ed. for the preparation of school teachers, and the institutions running these courses are monitored by the Council. Similarly, the courses and institutions running physical education teacher training courses also come under the control of the Council.

Council's Plan

Now, the Council wants both of these two types of courses fall in line with each other in respect of their duration and entrance eligibility at each stage, i.e. primary, secondary and collegiate level, so that they will enjoy equal status in school and college environment. It is with this purpose that the new pattern is introduced by the Council. According to this pattern, the teacher preparation at primary level is of two years duration after higher secondary exam (10+2). The teacher preparation for secondary level is also of 2 years duration, (i.e. BPED), but only after graduation; and for collegiate teachership additional two years are required to obtain MPEd degree.

This pattern would be in line with the proposed pattern of 2 years D.Ed., two years B.Ed. and then M.Ed. of 2 years. Though it appears quite sound in bringing parity in duration of the courses at each stage, it is not so. If examined from the angle of the nature of job to be performed by the two types of teachers, it would make the picture very clear. Let us examine the nature of job to be performed by these teachers.

Comparative Teaching Load & Curriculum Design

The classroom teacher is required to teach theory subjects in the classroom in a controlled condition. The science teacher will require laboratory in addition to classroom; but the physical education teacher has to bring the students to the play fields and teach them practical skills, which are of varied nature related to different group games and individual events. The teacher has to have knowledge and skill of various games, so that while teaching he has to also demonstrate the skill in an appropriate manner. He is also supposed to make classroom teaching in explaining rules of games, health habits, safety precautions, Olympic history and many other topics related to sports.

Skills like running, throwing, jumping, catching, ball handling, hitting, dribbling, kicking, balancing, weight lifting, swimming, rolling, dancing, etc require neuro-muscular co-ordination and high level of physical fitness. Apart from learning of theory of various games in the form of rules and regulations,

techniques of ground preparation, officiating of games, organization of sport tournaments, biomechanics of sports skills, coaching and training methods, sports injuries and their first aid etc the teacher trainee has to learn methods of teaching and lesson planning, too. For developing confidence in class control and implementing principles and techniques of class teaching into practice, the teacher trainee has to conduct actual lessons in sports and physical activities in school situations. Thus, the training work load is comparatively much more in physical education teacher preparation than in any other type of teacher preparation.

Age Eligibility — A Vital Factor

The training workload for teacher trainee becomes bearable and effective when the training starts at younger age and then continued for longer duration. It is at younger age only the skill learning becomes possible and required amount of neuromuscular coordination is developed. Therefore, the age eligibility should be considered while framing the criteria for admission to professional courses in physical education.

As proposed by NCTE, the teacher preparation for primary level starts after HSSC or 10+2 level. This is considered an appropriate age (i.e. 16 + yrs.). During the period of two years systematic training, the trainee can pick up most of the basic skills of various activities that are to be taught to the primary school children.

The three years degree course (i.e. BPE) after 10+2 is also well thought out course for those who want to serve at secondary level. One more year can be added to this course for learning the elements and principles of teaching technology. Four years intensive course after HSSC would be sufficient to train physical education teacher for secondary school level.

The entry of an individual after graduation to a basic course of physical education (BPEd) would be too late. At the age of 20 years one completes his/her graduation. After graduation if he/she is exposed to various basic and advance skills of athletics, gymnastics and various other games and physical activities it is observed that the trainees specially female trainees fail to develop required neuro-muscular coordination and cannot even acquire proficiency in those activities which are to be taught to the students of secondary school level. The NCTE has proposed two years course of BPEd for graduates. As the age advances, it becomes difficult for the individual to

sustain his/her interest of participation in variety of games and sports. So, keeping the BPEd course of 2 years duration would not serve the purpose. It would be futile exercise. The NCTE should rethink on this issue before it asks universities and colleges to run this course.

By introducing 2 years BPEd course the NCTE has —

- 1) reduced the training period from 3 to 2 years, instead of adding one more year to BPE 3 years course.
- 2) encouraged belated entry of trained graduates into the profession of physical education.
- 3) reduced the significance of three years BPE course.
- 4) sidetracked the basic thinking of catching youngsters and increasing their skill level.
- 5) brought restriction on girl students for their entry into physical education.
- 6) restricted healthy growth of the colleges of physical education.

New Pattern Package

For the consideration of NCTE as well as for the universities and managements of the colleges of physical education a new pattern of teacher preparation in physical education is proposed here. Concerned authorities would think over it. A national level seminar can also be called to critically discuss the old and new patterns of teacher education.

The pattern is of following nature :

S. No.	Level of Teacher Education	Entrance eligibility	Duration	Name of course
1.	Primary level	10+2 (HSSC)	2 Yrs.	C.P.Ed.
2.	Secondary level	10+2 (HSSC)	4 Yrs.	B.P.Ed.
3.	Collegiate or University level	10+2 (HSSC)	6 Yrs.	M.P.Ed.

Justification

1. The basic consideration for the teacher preparation is acquisition of sports skills of various games and athletic activities by the trainees, so as to enable them to deliver the goods effectively at primary and secondary level. It is possible only when importance is given to the learning age of the trainee. The new pattern proposed here fulfills the above condition. All teacher preparation

courses in physical education have a common entrance eligibility, i.e. HSSC (10+2) level.

2. Entry of girl students for professional courses in physical education after graduation puts lot of reservations and restrictions on their free participation in sports periods because of their advance age. Their entry after HSSC enables them to dedicate themselves to the learning of sports skills with less reservation and restriction.
3. A large spectrum of activities and variety of sports skills in the syllabus of teacher preparation need longer period of training to learn and acquire the skills.

Four years degree course after HSSC (10+2) would give full scope for the trainees to master many of these skills and show excellence in few of them.

4. It will also provide better opportunity for the trainees to participate in inter-collegiate and intervarsity sports NCC, NSS and many other social and cultural activities, thereby developing their personality.
5. The decision of joining 4 years degree course (BPED) itself is opting for only one vocation. Line of his career is fixed and i.e. teachership in physical education. The trainees will have no other option or scope for employment unlike the trained graduates of other disciplines. Moreover the scope of employment for a physical education teacher is very much limited as compared to the teachers of other branches.

Therefore, there should be no comparison between the two categories of teachers on the basis of equality of duration. A bridge course can be prepared for inservice physical education teachers to qualify them for higher promotions.

6. Running of shorter duration courses with limited number of trainees in physical education and keeping the standard norms of NCTE would be economically not viable for the management. It is also burdensome for the Government to finance such limitations. Maintenance of sports facilities, purchase of sports equipment and salary of teaching and non-teaching staff will put heavy burden on exchequer.

The funding agency like UGC extends grants to the colleges in proportion to the number of students. Admitting lesser number of students simply for two years duration would lead to get-

ting lesser financial assistance.

7. A full-fledged college of physical education with 4 years BPED and in continuation two years MPED course would provide better number of students to get financial assistance and status to the college, thereby promoting its healthy growth.
7. There is continuity of training in the proposed plan. At no stage of training new entry qualification is proposed. Basic qualification remains the same. There is only one-door entry for the professional training.

The old pattern maintains two-door entry. The first one after HSSC and the second one after graduation. At both these stages the professional inputs remain the same. There is no continuity and advancement in the knowledge, skill or contents of the course. Professional courses of shorter duration provide lesser scope for promoting research activity.

Epilogue

Monitoring of teacher training colleges and promoting their healthy growth is the concern of NCTE.

This paper discusses in brief as to how the courses of shorter duration have proved not only ineffective and infructuous but also detrimental to the profession of physical education.

Fifty years after our Independence and at the time when we are on the threshold of 21st century, instead of switching on to scientific and systematic preparation of teacher education at appropriate stage, we are still living in a fool's paradise. We do not want to shed out-dated pattern. The Council has prepared the plan, but unfortunately failed to envisage the right track of progress of physical education in the country. The pattern that is suggested by the Council is nothing but "*The Old Wine in New Bottle.*" □

TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communication should, however, be brief and to the point.

Vision of Neurosciences

Prof. N.K. Ganguly, Director General, Indian Council of Medical Research, New Delhi, delivered the convocation address at the fourth convocation of National Institute of Mental Health & Neuro Sciences (Deemed University), Bangalore. He said "Neurosciences is one of the interesting and fascinating areas which has grown with the advent of modern biology where behavioural sciences, social sciences, population sciences has amalgamated with molecular biology to provide opportunities and possibilities which never existed before."

Excerpts

The pace at which Neuro-sciences research is progressing today promises a bright future for the treatment of various mental disorders and is poised for major breakthroughs in understanding the brain-behaviour relationship. In recent years with the advent of microbiology-structural biology genetics and protein chemistry we have come to learn the relationship of the structure and function of the brain in a fashion which could never be dreamt before. Some of the new instruments like PET SCAN, functional MRI and the new spectroscopic methods have made it possible to draw a functional and biochemical mapping of the brain in relation to its structure wherein it will be possible not only to diagnose diseases like types of schizophrenia but also subtype them.

One of the major areas which we should understand in our country is the relationship of nutritions vis-a-vis development of brain and its functions. We now know that one third of our babies are under nourished and two third women of child bearing age lack proper nutrition. This is manifested in mediate fashion like genetic disorders, lowering of cognitive functions as well as lower IQ in children. We now know that large populations suffer from folate deficiency and neural tube defect is very high because of homocysteine abnormali-

ties which are also linked with another malady i.e., Coronary Artery Disease. The zinc deficiency in mothers and children along with deficiency of iron and vitamin A lead to functional neuronal defects. These are some of the major challenges for our neuro scientists to work in tandem with the nutritionists so that these problems are solved. There is another major problem challenging us i.e., the environmental pollution and its effects on brains functioning. We now know that lead poisoning is rampant in our country because of the use of gasoline, new paints and the plumbing. In some of the cities the levels of lead are anywhere near 60 gms./ decilitre particularly near the foundries. The good thing about this is, that we could still do something about this and a multidisciplinary approach would be beneficial.

In this country the Neuro-Scientists should not forget havoc caused by infections. This is especially so in the case of epilepsy caused by neuro cysticercosis. Newer imaging, specific recognition of antigen and their detection and DNA diagnostics have made it possible to make specific diagnosis, thereby, providing succour to large number of children and adults who had no hopes before. Of course development of new receptors in epileptics are leading

to design of newer drugs for a large number of patients who not only suffer but also face discrimination. AIDS and CNS infection is also another major problem looming ahead. We now know that AIDS virus can infect macrophage like cells in CNS and can access the NMDA receptors to cause apoptosis and brain death. This is an area where new drug development has occurred to minimise its effects. We also now know that TAQ protein of AIDS virus pervades neuronal cells and causes altered signalling leading to brain damage. This appears to be one of the most challenging field of research in the next millennium *inter alia*. We also know that in the recent past mad cow disease produced a scare around the world. Some of the countries such as Great Britain where the whole economic profile got altered, suffered with crippling economic losses. Now we know that molecules like Prions are responsible for this and looking in the method in which Prions assemble and the way in which they are modulated are bringing new hopes for the cure of this disease. It is as scary as General Paralysis of Insane was in early fifties and sixties though it is no longer a problem now. The other infection of concern for India is — Rabies. Now we know that it is not only the NEGRIBODY but the viral antigen also makes a foot print throughout the CNS.

There have been some very new interesting developments that have occurred in India such as HEla cell based vaccine developed by Indian Pharmaceutical Firms, DNA vaccine developed in India by Indian Institute of Science and plant based bait vaccine by NDRI, as well as caracass bait vaccine in Chennai. A novel concept of sterilizing dog and immunizing them with rabies has been developed by National Institute of Immunology where Zona

pellucida vaccine with a rabies epitope is being developed. A chimeric antibody based probe has been developed in AIIMS for better imaging diagnoses of rabies. Most of you know about the new treatment methods wherein now the lives could be saved of rabies afflicted. Similar developments have occurred in JE virus wherein we are moving fast towards development of cell based or DNA based vaccine understanding the immunology of this dreaded disease and using Indian virus strain instead of Nakajima strain. Another very challenging area is cerebral malaria which afflicts the eastern and north eastern part of our country primarily. Indian scientists working through functional genomics have mapped special motifs which the malarial parasite develops while interacting with structural proteins. This will lead to designing of new drugs. We also now know the role of cytokines, the inflammatory cell products in pathogenesis of this disease wherein there is also new intervention and drugs which are being developed. The tropical neurology and neurobiology will be our foremost priority in this country and we are now making strides in developing malaria vaccine (two new malaria vaccines are being developed and they will undergo field trial).

The food and food related Neurobiology and Neuroscience has also assumed new dimensions. We now know that NMDA receptors are accessed through monosodium glutamate poisoning wherein through increased calcium flux and involvement of ICE genes severe neurologic disorders result which are preventable through interventions such as zinc and protease inhibitors. Similarly the Domoic acid which is poisonous substance from shell fishes has an independent receptor which could again cause neuronal death wherein

again new intervention could be planned. We know the story of lathyrism. The new transgenic plant developed in JNU has ability to provide added nutrition where the toxic component has been taken out. We also know some of the other toxins like botulin toxin which can cause severe disability can also be used as a drug to cure several neurologic diseases.

Another area of major importance to India is the problem of stroke where the new molecule NO plays a major role and the NO antagonist could change the scene by reducing the morbidity and cell destruction. Since Indians have more coronary artery diseases and strokes and these have common pathogenesis, interesting theories about interaction of gene cascade controlling the obesity, diabetes and certain apoproteins which are triggered in the mother womb because of effects of malnutrition, drugs or infection are now known. Some of the infection which have been highlighted are chlamydia and H.pylori. Another major cause of concern is road accidents. A large number of Indians die because of that. New parameters for measuring cerebral edema through biochemical techniques have been evolved. Similarly, scavenging the free radicals and reducing inflammation through new anti-inflammatory drugs have also given new hopes in this field. It is now possible to regenerate brain. An initial experiment in this area has shown epoch making result through cell transplantation in dogs. Other important area which will make difference in the understanding the process of ageing is the discovery of cascade of cyclo-oxygenase and hypo cyclo-oxygenase pathways interacting with free radicals and lack of inherent anti oxidants provide new leads in stopping the process of ageing. In the same way we now know that genes interacting in the area of

Alzheimer's disease and some of the gene product which modulate the memory function. Now we know hundreds of peptides and chemicals, lipids and cytokines which can act as powerful neuro transmitters and modulate cell function. These will lead to designing of new drugs wherein new treatment modalities have been devised in Schizophrenia, Depression and in Parkinson's diseases.

We now know the significance and contributions of epidemiologic studies in providing leads for research and intervention. For instance the relationship between beri-beri and vitamin B1 was established by epidemiologic study. Similarly, the relationship of *handigodu* disease which is specific to a particular population and the relationship with nutrition, genetics and environment was established through several epidemiologic studies. Epidemic dropsy and its relationship to Argimone are few of the myriad examples which have affected Indians in the past and have time and again highlighted the significance of epidemiology studies.

Another major thrust area of research has been use of cytokines as drugs. The drug betaseron has been used to treat Multiple Sclerosis a dreaded disease where there was no hope. Interferon is now being produced in India and very soon we might have betaseron also. The area of Neuro-immunology is a fascinating field. We now also know that cytotoxic lymphocyte are generated "in Situ" in CNS and a cascade of cytokines evolving macrophage like cells as well as T-lymphocyte are unleashed and many of the allergic inflammatory diseases are generated through this mechanism. We also know the role of neuropeptides and the role played by hormones in the causation of disease far removed from CNS such as hypertension. There

are other areas where immunologic process plays a definitive role as in leprosy wherein the neuropathy is because of local delayed hypersensitivity reaction.

A knowledge explosion has occurred in the area of brain function and memory and now we know that similar set of functions can be controlled through multiple areas in the brain for establishing connectivity to interact with each other. The Freudian concept of subconscious has now been given a better understanding through these connectivity and expressions. One of the methods is that different sets of neurons have different rhythm which could be measured through electrical field and potential difference. These provide the connectivity wherein the neurons with similar rhythm interconnect at one time. We now know that neuron could be classified through mo-

lecular mechanisms in a much better fashions. Another area where important leads have been generated is the area of receptors. We now know about special receptors in the areas of neuroleptics and transmitters with distinctive protein signatures. We now also know about leads regarding distinct signalling pathway which follow such interaction. Hence it is now possible to intervene at the level of peptide by modeling drugs through computer simulation or intervene at the signal level.

Finally, major development in India has occurred in diagnosing neurologic disorder whether genetically determined or through distinct gene expression caused by environment. NIMHANS with CBT has undertaken a major project on this and it is now possible to diagnose such disorders before birth or to diagnose specific polymorphism or mutation in de-

fined population and families in this country. It will be possible to find / develop intervention in many of the conditions. I will not attempt to make a listing. However many of the known CNS disorders can now be diagnosed in India through this technology. DNA chip or DNA array technology will make it possible for mass diagnosis of this condition. Hence the area of Neurosciences is one of the interesting and fascinating areas which has grown with the advent of modern biology where behavioural sciences, social sciences, population sciences has amalgamated with molecular biology to provide opportunities and possibilities which never existed before.

I invite those who have been conferred degree and those who would be striving for that to enter this wonderful matrix and provide new insight for the suffering masses in India. □



K.K. Birla Foundation

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Last date 15 March, 2000. Full details and Proposal/Application forms etc may be obtained from the Foundation's Office, Hindustan Times House, 10th Floor, 18-20 Kasturba Gandhi Marg, New Delhi-110 001 (Phone : 3317735, 3718282).

CAMPUS NEWS

National Seminar on University Administration

The Association of University Administrators (AUA) in collaboration with North Bengal University Officers Association recently organised a National Seminar on "University Administration : Challenges and Opportunities in the 21st Century. The Seminar was hosted by the University of North Bengal. The sub-themes of the Seminar were : (i) Missions and Structures of the University of the Future, (ii) Relevant technology for University Management, (iii) Resource Generation and Funding of Universities, (iv) Professional development of University Officers, and (v) Vision of a new University.

Prof. Satya Sadhan Chakraborty, Minister of Higher Education, Govt. of West Bengal inaugurated the Seminar. Dr. Ashok Bhattacharyya, Minister of Urban Development and Municipal Affairs, West Bengal Government graced the occasion as Chief Guest. Prof. Ranju Gopal Mukherjee, Vice-chancellor, University of North Bengal presided over the inaugural function.

In his inaugural address Prof. Chakraborty said that providing higher education to all those who deserved and aspired for it was the duty of the state for national development and advancement of knowledge. It was therefore necessary that our universities were strengthened to make available the best possible education comparable to the standards in any part of the world. It was also necessary to ensure quality and excellence in the area of higher learning. He said that the Govt. of Bengal spent

about 26% of its budget on education which was perhaps the highest in the country and it showed how much importance the state government attached to the education of the people.

He appreciated the efforts of the AUA in organising seminars, workshops and orientation refresher courses for professional development of university officers without any financial assistance either from state or central governments or UGC. He, however, emphasized that there was a need to impart training to all employees of the universities for their professional development to enable them to ensure effective and efficient management of our universities.

Dr. Asok Bhattacharyya in his address said that Govt. of West Bengal was eager to strengthen universities by all means to provide leadership in all walks of life for national development. Despite financial constraints, universities of West Bengal had produced men and women of eminence in all fields of intellectual activity who had contributed at national and international levels. These men and women included Nobel Laureates ranging from Rabindra Nath Tagore to Amartya Sen.

Prof. Mukherjee in his presidential address said that at the fag end of the century it was appropriate to look forward to the new century and prepare ourselves to welcome it. He congratulated the Association of University Administrators on organising a seminar on such an important and relevant theme as "University Administra-

tion : Challenges and Opportunities in the 21st Century."

He said that the events of the 20th Century had shown that even a decade may become an epoch throwing up new challenges and opportunities falsifying our preparation. Uncertainty and unpredictability may be challenge number one and the challenges and opportunities to be faced by the university administration cannot be considered in isolation from those to be faced by the higher education system itself, he added and the following observation of the Director General of UNESCO, "As we approach the end of this century to prepare to enter a new millennium, we are witnessing an unprecedented development of higher education and increased awareness of its vital role for economic and social development. Yet Higher Education is in a state of crisis in practically all countries of the world."

He said that this contradiction had also been echoed in the "World Declaration on Higher Education for the 21st Century : Vision and Action" adopted at the World Conference on Higher Education held in Paris from 5-9 October, 1998. He emphasized that Higher Education was faced with great challenges and difficulties related to financing, equity of access, enhancement and preservation of quality, relevance of programmes and employment of graduates everywhere in the world. He outlined the major tasks before Higher Education as follows :

(a) The system of Higher Education should be radically

changed so that our society, which is currently passing through a profound crisis of values, can rise above economic considerations and incorporate deeper dimensions of morality.

- (b) Enhance the societal values that form the basis of democratic citizenship.
- (c) Reinforce its role of service to society, especially, activities aimed at eliminating poverty, intolerance, violence, illiteracy, hunger etc.
- (d) Aim at creation of a new society, non-violent and non-exploitative.

On the proposed identification of twenty-five universities by the University Grants Commission for grant of status of "Universities of Excellence", he said "we have no quarrel with excellence. We all admire excellence. We aspire after excellence," but he questioned the wisdom of the idea in a situation where paucity of resources had resulted in depriving almost all the universities of the basic, minimum requirements. He asked, 'Can we accept the thought of 'excel or perish'? He advised the delegates to ponder over these issues seriously to find out ways and means to put the system on the right track.

Shri G.S. Vijaipal, Secretary, Association of University Administrators, said that one of the major objectives of the Association was to promote professional development of university officers and towards this end it had been organising seminars, conferences and professional development programmes from time to time.

The major issues before the universities all over the world, according to him, were :

Access to and equity in higher

education; Funding of universities/institutes of higher learning; Quality assurance in higher education; Lack of professionalism in the management of universities; and Un-preparedness for change management in universities. We cannot manage new type of emerging institutes of higher learning of twenty-first century (maybe traditional universities, mega open/virtual universities or multi-varsities of the future) with 18th century knowledge and tools. We have to update and upgrade ourselves to face challenges of the management of universities of the future.

He said that existing arrangements of training were not at all adequate to take care of professional development of lakhs of non-teaching employees (including officers) working in the universities and institutes of higher learning in the country. He pointed out that, at the initiative of the Association of University Administrators, the Government of India had constituted a committee in January 1991 under the chairmanship of Prof. Amrik Singh to suggest measures to augment training facilities for university/college administrators. This Committee made significant recommendations in its report to the Ministry of Human Resource Development in September 1992. One of its recommendations was establishment of a National Institute for Training and Research for professional development of university and college administrators on the pattern of the academic staff colleges for teachers. It was a matter of great concern that recommendations of this high powered committee were gathering dust in the corridors of the Ministry and the UGC, he said and exhorted the authorities to do something to equip university administrative officers with match-

ing professional skills to face challenges of the times ahead for effective management of our higher education and university system.

While presenting the summary of the sessions on sub-themes (i) Missions and Structures of the University of the Future, and (ii) Vision of a new University; Dr. R.S. Sarao, Registrar, Punjabi University who chaired the sessions, said that with the advent of revolution in education, the missions and structures of the universities were bound to change. The papers presented in the session highlighted the knowledge explosion and rapidly changing technology which was heralding an unprecedented revolution in the society. The universities cannot escape the changing scenario. Rather these institutions of higher learning will have to play an active role to harness the opportunities and prepare for the challenges ahead. The use of relevant technology for university management was absolutely necessary to face the emerging challenges on educational scene.

Dr. S.R. Kanakraj, Registrar, Rajiv Gandhi University of Health Sciences, Bangalore who presided over the sessions on the sub-themes : (i) Professional development of University Officers, and (ii) Relevant technology for University Management, while summing up the discussion, said that there was lack of opportunities for professional development for university officers. There was inadequate appreciation of relevant technology for the management of university affairs. It was emphasized during the discussion that it was high time that training arrangements for the university officers on the lines of Academic Staff Colleges for teachers were made so that the university administrators could be equipped with knowledge, techniques and mod-

ern methods of management for effective administration of emerging new institutions of higher learning.

Dr. Ranjan K. Roy, Registrar, University of Kalyani who chaired the session on "Resource Generation and Funding of Universities" highlighted that during discussion it was discovered that many of the universities had made vigorous efforts to generate new resources and had also succeed in raising funds through internal economies and other means such as providing consultancy services and optimal utilization of infrastructure available with them. One of the case studies revealed that Indira Gandhi National Open University had generated 70% of its annual funds through such measures and was very less dependent on govt. funds. It was felt that other universities could also raise some funds through utilisation of existing lands and infrastructure with them. However, major portion of funds will have to be provided by the govt. to the universities and institutions of higher learning.

Responding to the challenges posed by university administrators, Dr. S.N. Suri, Registrar, Indian Institute of Public Administration (who is also Vice-President of the Association of University Administrators) said that if Ministry of Human Resource Development and University Grants Commission took the initiative for training and professional development of university administrative officers, IIPA was an ideal organization for providing facilities for administrators/managers. Similarly, the Indira Gandhi National Open University was another organization which could collaborate to provide training facilities through its distance and open learning mode to a large number of officers. "Let us network. We need to work to-

gether. Obviously, the initiative will have to be taken by apex bodies responsible for maintenance of standards of higher education and management of universities."

After detailed deliberations the following salient recommendations emerged :

1. Taking note of the rapid, rather revolutionary, changes taking place in science and technology; social demands of access to equality in higher education; quality assurance and cost factors, need of life-long learning and continuing education; it was resolved that the university administrators should take the initiative to prepare themselves to face the new challenges by upgrading their knowledge, techniques and attitudes through participation in professional activities like seminars, workshops, orientation and refresher programmes. These activities should be organised in each university to exchange ideas and experiences for improvement of the university administration and management.
2. University administrators should set an example of professional commitment and integrity.
3. It was recommended that the Ministry of Human Resource Development (Govt. of India), the University Grants Commission and State Govts. should implement recommendations of their own expert committees (particularly, the recommendations of Prof. Amrik Singh Committee of 1992 on training of university and college administrative officers) to save the institutions of higher learning from ills of mal-administration and unprofessional management.

Multimedia Courseware for Distance Education

The Commonwealth Educational Media Centre for Asia, New Delhi and University Computer Centre Osmania University, Hyderabad plan to organise a workshop on Developing Multimedia Courseware for Distance Education at Hyderabad on 3-13 January 2000.

This workshop will familiarize participants with the design and development of multimedia courseware for both stand alone and internet technology. The key objective of the workshop would be to introduce the participants to multimedia technology and its multiple applications in training and education.

The workshop will expose the participants to the fundamentals, hardwares, softwares and tools. The thrust will be given to Electronic Instructional Design, Digital Media Design, Content Creation, and Authoring.

The training will consists of lecture sessions, practical hands-on experience on computers. The mix of lecture and practicals will be in equal ratio.

The workshop is intended for Educationists, Multimedia Professionals, Consultants, Medical Professionals and Researchers. Participants must be familiar with Microsoft windows.

Further details may be had from Mr. K. Narayanan, Head Administration and Finance, CEMCA, 52 Tughlakabad Institutional Area, New Delhi-110 062, Fax : 91-11-6985208, E-mail: cemca@giasdl01.vsnl.net.in

North East VCs Meet

A one-day conference of Vice-Chancellors of the North-Eastern States was recently held at the

Assam University, Silchar. Besides the hosts, the meeting was attended by Vice-Chancellors of Gauhati University; Sikkim Manipal University of Health, Medical and Technological Sciences, Gangtok; Central Agricultural University, Imphal; Tezpur University; Arunachal Pradesh University, Itanagar; Manipur University, Imphal; and the Pro-Vice-Chancellor of the North Eastern Hill University, Aizawl.

The meeting resolved to work jointly in the matter of library facilities, curriculum development and evaluation. Towards this end, the universities will develop a Common Academic Structure and Information Technology Network.

Refresher Course for Language Teachers

The Academic Staff College of the Devi Ahilya Vishwavidyalaya recently conducted a 3-week refresher programme in comparative languages and literature for language teachers. The programme was organised in the following three sections :

- (i) The Theomatic Content of Comparativity;
- (ii) Comparativity as can be traced through literature, culture and languages; and
- (iii) The different spheres of comparativity in Indian literature and the innate quality of comparativity in the Indian culture and its reflection in literature — the study of which would help strengthen National integration. This was traced through linguistic analysis.

Also comparativity in western content and the symbolic feeling of universal human qualities in literature were also evaluated.

Dr. Chandra Mohan, Presi-

dent, Indian Association for Canadian Studies, delivered lectures on, Diasporic writings, Orientalism, Media and writing and Indo-Canadian writings. It was infact a new vista for the participants as socio-cultural living and its impact over the mental state is depicted through literature.

Dr. Siddiqui from Jamia Millia Islamia described human qualities spread over Urdu literature and stressed the need of depicting universal human values in literature.

Dr. Shafi Ahmed from Burhanpur, in his lecture on "Parsee Theatre" described the development of modern Indian stage and its simultaneous flow in the commercial Parsee theatre and its magnetic influence over the Indian stage and their application in stage techniques. His presentation on the contribution of the Urdu poet Nazir Akbarabadi was indeed breath-taking.

Dr. Vrishabh Jain (Mahatma Gandhi International Hindi University), spoke on the value of creativity and use of symbols in language formation.

Dr. Nirmaljeet Oberoi from Vikram University, Ujjain, highlighted the new openings in the field of socio-linguistic while Shri Krishnakant Dubey speaking on Bhili Culture stressed the value of oral tradition in folk literature.

Dr. Mahashabde from Devi Ahilya University, Indore delivered thought provoking lectures on Indian-English writings and Indian novels in English. Dr. Shantaram, presented a critical analysis on the contemporary Telgu poetry and initiated discussions on the modern trends in the Indian writings.

Dr. M.P. Tripathi made a presentation on the symbolic significance of living creatures like birds,

animals and reptiles in Indian Literatures. Presentations were also made on the Symbolic creativity of the socio-cultural revolutionary literary depiction in Dalit Literature; the philosophic moorings and influences on English, Hindi, Sanskrit and Marathi literature. The Indian quality in framing calendar was also highlighted.

The Co-ordinator, Prof. Lalithamba looked at literature from humanistic angle, Indianness and Indianisation as part of comparative literature.

Indraprastha Varsity Annual Day

The Union Human Resource Development Minister, Dr. Murli Manohar Joshi, said that ancient India had enormous technological capability and this should be developed for achieving excellence.

Inaugurating the first annual day function of Guru Gobind Singh Indraprastha University, Dr. Joshi said, "our country should adopt the motto : India innovates, India leads, India does not follow."

The Minister said it was high time India reappropriated and recaptured its past status as technological leaders of the world and gave leadership to the designing of 'low energy-inputs-for-high-technology-outputs model' akin to nature. He hoped that the University would be a harbinger of this re-orientation.

"Efforts should be made to disseminate information about Indian technology on the Net so that it becomes a leading technology exporting country in the next century," Dr. Joshi pointed out.

The Lieutenant-Governor of Delhi, Mr. Vijai Kapoor, who is the

Chancellor of the University, stressed the need for quality and said it should be the only yardstick for judging the standard of education.

"Universities should produce such manpower which becomes useful for the society. Professional educational institutions should have wide chain of interface with the corporate sectors," he added.

The Education Minister, Dr. Narender Nath, informed that 35 professional colleges had been affiliated to the Guru Gobind Singh Indraprastha University and 85 per cent seats had been reserved for Delhi students.

In his opening remarks, the Vice-chancellor, Prof. K.K. Aggarwal, said a spirit of uniqueness underlies its conceptual framework and within a short duration of one year, it has emerged as a professional university of repute.

On the occasion, Dr. Joshi launched the website of the University to disseminate information about the various activities. The Lieutenant Governor released two maps of Delhi — one on the environmentally fragile areas and the other — land use/land cover map of Delhi.

Prof. Raju Gold Medal

A Gold Medal in honour of Prof. A.A.N. Raju, presently Emeritus Fellow, and formerly Head, Dept. of Library & Information Science, and Dean, Faculty of Social Sciences, Osmania University has been instituted with Dr. B.R. Ambedkar Open University, Hyderabad by the "Prof. A.A.N. Raju Award Committee" with the support of LIS professionals. The Gold Medal entitled "Prof. A.A.N. Raju Gold Medal" shall be awarded every year to the student who gets

highest marks in MLISc Course of Dr. B.R. Ambedkar Open University, Hyderabad. This award will come into force from 1998-99 batch of MLISc Course.

Rs. 60 Lakh Donation for Kurukshetra Varsity

Mr. Ram S. Goyal, an American Philanthropist of Indian origin, has donated a sum of Rs. 60 Lakhs to Kurukshetra University for continuing the four Goyal Prizes carrying a sum of Rs. 1 Lakh alongwith a gold medal and for starting five Rajib Goyal Prizes for Young Scientists of Rupees fifty thousand and a silver medal.

The Goyal Prizes, instituted by Mr. Goyal in 1992, are given in the fields of Applied Sciences, Chemical Sciences, Physical Sciences and Biological Sciences. These prizes are awarded annually to those scientists who have made outstanding contribution to the Indian Science. Past awardees include, Dr. K. Kasturirangan, Dr. R.A. Mashelkar, Dr. J.V. Narlikar, Dr. C.N.R. Rao, Dr. Goverdhan Mehta, Dr. Asis Datta and Dr. (Mrs.) Asima Chatterjee.

Accepting the donation, Dr. M.L. Ranga, Vice-Chancellor of Kurukshetra University said that Goyal Prizes will greatly contrib-

ute to the promotion of scientific research and encourage scientists to dedicate themselves to the cause of science as well as national development. He expressed the hope that many other Indians settled abroad will draw inspiration from Mr. Goyal's example and follow the tradition set by him.

While expressing his confidence for maintaining the excellence of the Goyal Prizes in the new set up, Dr. S.P. Singh, Professor Emeritus, Kurukshetra University who has been overseeing the selection process so far informed that Mr. Goyal intended to contribute more money for increasing the number of prizes in the near future. Dr. Singh will continue to be associated with these prizes as Vice-Chairman of the Organising Committee with the Vice-Chancellor, Kurukshetra University as Chairman.

Rural Development and Human Rights Violation

Swami Ramanand Teerth Marathwada University, Nanded is organising a National Seminar on "Rural Development and Human Rights Violation" from February 7-9, 2000. The Sub themes of the Seminar are :

i) Tribals and Human Rights Violation, ii) Rural Labour and

Prof. Ramlal Parikh Passes Away

Prof. Ramlal Parikh, Chancellor, Gujarat Vidyapith passed away on 20th Nov. '99. A close associate of Shri Morarji Desai, Prof. Parikh was steeped in Gandhian thought and culture which he taught at Gujarat Vidyapith for over 30 years. He was a member of the University Grants Commission from 1979 to 1981 and also served as the Chairman of its standing committee on Adult and Continuing Education. As a member of Rajya Sabha during 1975-81 he espoused causes like child adoption and family welfare. He was the President of the Association of Indian Universities for the year 1991.

Human Rights Violation, iii) Rural Women and Human Rights Violation, iv) Minority Communities and Human Rights Violation, v) Agricultural Sector and Human Rights Violation, vi) Human Rights Violation and NGOs, viii) Dam, Displacement and Human Rights Violation.

Eminent scientists and academicians like Prof. Ashgar Ali Engineer, G. Hargopal, Jaganath Pathy, Surendra Singh etc, representatives of NGOs and Government Officers in the States of Maharashtra, Gujarat and Goa are expected to present papers, for further information contact Head of the Department, School of Social Sciences, SRTM University, Nanded-431 606 (MS).

Library Public Relations

The Central Library IIT Madras organized 13th Staff User meet followed by special lecture on "Public Relations in S&T Libraries" by Dr. M. Nagarajan, Reader, Department of Library & Information Science, Annamalai University, Annamalai Nagar on 07.12.1999. Over 70 participants including staff, students and local librarians attended the meet. Dr. Harish Chandra, Librarian, Central Library, IIT, Madras chaired the meet and Mr. M. Koteswara Rao, Deputy Librarian proposed a vote of thanks.

Rs. 180 Cr. for Literacy Mission

The Union Cabinet has decided to reinvigorate the National Literacy Mission and has approved a substantial increase to approximately 180 crore in the allocation for the remaining two years of the Ninth Plan.

In approving substantially enhanced parameters for each of the schemes of the mission, the Cabinet endorsed the successful

campaign approach and acknowledged the need to redouble efforts to wage a war against illiteracy in a 'mission mode'.

Literacy rates in India have shown improvement. As per the latest survey conducted by National Sample Survey Organisation, literacy rates have gone up approximately 10 per cent points in the last six years between 1991 and 1997, taking India's literacy level from 52 per cent in 1991 to 62 per cent in 1997. Between 1951 and 1991 there has been an average decadal growth of only 8.5 per cent.

Among the major recommendations approved by the Cabinet were an integrated 'literacy campaign' which will amalgamate all the features of the earlier total literacy and post literacy phases.

District literacy societies would continue to oversee and run literacy programmes but they would have full freedom to synergise their strengths with those of local youth clubs, mahila mandals, voluntary agencies, Panchayati Raj institutions, small-scale industries and cooperative societies.

The annual per learner cost for the total literacy phase has been raised from Rs. 65 to Rs. 90-180 and for the post literacy phase from Rs. 45 to Rs. 90-130.

Schemes of continuing education encompassing removal of residual illiteracy, individual interest programmes, skill development, rural libraries would allow for opening of Continuing Education Centres in every major village.

Some of the other recommendations include a major role envisaged for NGOs who would be allowed to receive funds from district literacy committees and actually run Continuing Education Centres.

A major decentralisation process would be set in motion allowing state governments to vet and scrutinize their own Continuing Education Projects through the State Literacy Mission authorities.

NGOs would also receive grants for activities relating to the organisation of the functional literacy component in various developmental programmes and for imparting functional and technical education to neo-literates.

The existing state resource centres which conduct the training of literacy functionaries and preparation of reading materials will be considerably strengthened. Shramik Vidyapeeths will be renamed as Jan Shikshan Sansthanas. These institutes for vocational training will now target rural areas.

News from Agricultural Universities

ISAE Awards

The Indian Society of Agricultural Engineers (ISAE) has conferred the highest honour on Dr. M.L. Taneja and Dr. R.S. Devnani for their life-time achievements in the field of agricultural engineering. Dr. Taneja has been awarded

the ISAE Gold Medal for the outstanding contribution to the profession of agricultural engineering and to the society. Dr. Devnani received Prof. C.V. Paul Gold Medal in recognition of his landmark contribution to farm machinery de-

sign, development and application.

The awards were presented at the on-going 34th convention of the ISAE at CCS Haryana Agricultural University by the ISAE President Dr. A. Alam.

Nine farm engineers of eminence, both from India and abroad, were conferred with the fellowship of the Society. These include Dr. V.P. Singh (USA), Dr. K. Makhija (Bhopal), Dr. A.M. Chauhan (PAU, Ludhiana), Dr. R.A. Rastogi (GBPUAT, Pantnagar), Dr. S. Swain (OUAT, Bhubaneswar), Dr. V. Sreenarayanan (TNAU, Coimbatore), Dr. S.M. Hyas (ICAR, New Delhi), Dr. Suresh Prasad (IIT, Kharagpur) and Dr. R.S. Deharey (New Delhi).

Dr. Jaswant Singh (IISR, Lucknow), Dr. J.K. Singh (GBPUAT, Pantnagar), Dr. P.V. Kutumba Rao (Gudivada) and

Dr. S.S. Tomar (ICAR, New Delhi), were presented commendation medals for the year 1997-98 for their distinguished achievements in farm engineering.

Besides, Dr. P.D. Gupta, Dr. P.S. Chattopadhyaya, Dr. R.K. Goyal and Dr. V.C. Pachauri of IGFRI, Jhansi were bestowed the team award for the development of bailing machine, while Dr. D.S. Taneja (PAU, Ludhiana), Dr. S.K. Tandon (ICAR, New Delhi), Dr. H.S. Biswas (CIAE, Bhopal) and Dr. H.S. Lohan (Chandigarh) were given away Shankar Memorial Award, Aspee Award, R.K. Jain Memorial Award and S.J. Hiran Memorial Award, respectively.

Dr. A.N. Mathur, Dr. N.S. Rathore and Dr. V.K. Vijay (CTAE, Udaipur) received award on their book : *Urja Parishitiki Vigyan Evar Paryavaran*, whereas Dr. Subrata Karmaker and Dr. K. Patel were awarded Reddy Award for their best P.G. theses.

"Grainage — The Heart of Silk"
"War Against Malnutrition"
"Chaos-Kitchen and Chapati"

5.1.2000

"Paralysis of Speech Aphasia-2"
"Frontiers of Nutrition Science"
"Touch of Genius"

6.1.2000

"Role Model — An Uncommon Commoner"
"The Unknown Inventor- Joseph Muthukalathil"
"Question Time-132"
"The Hindu Temple Sikharas-II"

7.1.2000

"A Life Full of Confidence"
"From Darkness to Light : Rishis of Kashmir"
"Nutrition — Problems and Challenges"
"Health Education : Obesity"

8.1.2000

"शास्त्रीय संगीत के विभिन्न अंग-संतूर के संग-II"
"Delhi Silpi Chakra — The Early Years"

9.1.2000

"फिर बोला मधुर बजाओ"
"Sport on Environment"

Autonomy for More Colleges

The University Grants Commission (UGC) has reportedly decided to go pro-active on the process of granting autonomy to colleges. Peeved at the slow response from universities on this proposal, the Chairman of the Commission, Dr. Hari Gautam, said that they would soon identify reputed colleges and offer them autonomy.

According to him, a majority of the 136 autonomous col-

News from UGC

Countrywide Classroom Programme

Between 1st January to 9th January, 2000 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programmes are telecast on the Doordarshan's National Network from 9.30 to 10.00 a.m. every day except on Saturdays & Sundays. These programmes are also telecast on Doordarshan's National Network from 6.00 to 6.30 a.m. on all days of the week. On DD2 International Programme will be shown at 11.00

to 12.00 hours on Saturdays only.

1.1.2000

"शास्त्रीय संगीत के विभिन्न अंग-संतूर के संग-I"

"Lace Makers of Andhra Pradesh"

2.1.2000

"Potlooi — The Celestial Skirt"
"Question on Culture"

3.1.2000

"Physics of Music-2 : The String Instrument"
"Atmospheric Electricity"
"Drops for life — Pulse Polio Immunization"

4.1.2000

"Mango — A Fruit of Joy"

leges were in Andhra Pradesh and Tamil Nadu. None of the universities in other parts, he said, have come forward to grant autonomy to colleges affiliated to them.

"We are left with no option but to side-step the universities and go to colleges ourselves."

Autonomy, Dr. Gautam said, would ensure greater academic freedom to colleges. It allows colleges to plan their own courses and follow the system that suits them most. The Commission, he said, had decided to hold talks with some of the reputed colleges in the Capital like St. Stephens, Shri Ram College of Commerce and Lady Shri Ram College among others and offer them autonomy.

"Autonomy is restricted to the academic sphere. In all other aspects the colleges will have to go according to set standards."

Extending the pro-active approach, the UGC Chairman said the Commission planned to make it compulsory for all universities to be accredited by the National Accreditation and Assessment Committee, set up by the UGC five years ago.

Apparently, only few universities have applied and received accreditation so far.

By making it compulsory, at least the UGC could evolve a way to grade institutions.

A student seeking admission will then be able to assess the quality of education in a particular college by the number of stars against it.

Further, Dr. Gautam, said the Commission was prepared to bear the expenses incurred during accreditation.

The Commission also plans to list out 20 universities of excellence which stand out from the rest in every respect. According to Dr. Gautam, funding to these universities would be separate and a different set of rules would apply for them.

Among other significant changes planned for the future,

the Commission has decided to expedite the implementation of the Rehman Committee Report which proposes a hike in tuition fees.

The UGC Chairman was of the view that while collections on other heads have gone up in colleges, the tuition fee has remained the same and it was about time this was increased.

News from Abroad

World Conference on Distance Education

ICDE organizes the World Conferences on Open and Distance Education biannually since 1938. These conferences are considered the main world events in open and distance education, and offer a tremendous variety of presentations on open and distance education in the world.

The next ICDE World Conference will be held from 1st April to 5th April, 2001 in Dusseldorf, Germany. This conference is a major effort by the international society to focus on the future of education and training at the beginning of the next century. The World Conference will be officially co-sponsored by International Council for Open & Distance Education (main organiser), The World Bank, UNESCO, UNICEF, The European Parliament, The European Commission, The South East Asian Minister of Education Organisation, The Government of Germany, The Government of North Rhine Westphalia. ICDE is also cooperating with the major national and regional educational associations world wide in planning for this conference.

The President of the German Distance Teaching University (the Fern Universität), Prof. Dr. Ing

Helmut Hoyer chairs the Programme Committee for the World Conference in Dusseldorf. The theme of the Conference is "The Future of Learning. Learning in the Future, Shaping the transition". The Secretary General of ICDE, Reidar Roll, is in charge of the overall coordination of the conference.

Virtual flexible learning will be the key strategy for learning and training in the economy of the information society, where updated knowledge, skills and information throughout the entire population, will be a prime basis for the development of businesses and nations. The background for the conference will be the dramatic development in Internet, phone communications, multimedia and computing technologies, which are now being applied to education and training. These developments are dramatically changing our opportunities to learn and distribute education in our different nations, as well as to large audiences across the planet. It is expected that this world conference will be a milestone in the development of our understanding of how to develop the new education models of the next century.

BOOK REVIEW

A Welcome Volume of Critical Essays

G.S. Balarama Gupta*

R.K. Singh, Ed. *Psychic Knot: Search for Tolerance in Indian English Fiction*. New Delhi, Bahri Publications, 1998. Pp. 211. Rs. 300/-.

In his masterly introductory essay, "Intolerance : The Psychic Knot," R.K. Singh, one of our indefatigable academics, explores, with much erudition and perception, the discourse of tolerance in contemporary Indian English fiction and highlight how some of our fictionists like Markandaya, Malgonkar, Mistry, Jhabvala, Bharati Mukherjee, and a host of similar others, have striven to underscore the "intercultural interaction, tension, and fusion" in their novels.

Following this, we have another equally scholarly essay, "The Many Faces of Tolerance," in which Jasbir Jain asserts that tolerance is a multi-dimensional concept and analyses Raja Rao's *Kanthapura*, Sahgal's *Mistaken Identity*, and Mistry's *A Fine Balance* in the light of this assertion. Then we have "The Roots of Tolerance", in which O.P. Mathur, another senior academic, gives a well-sustained expatiation of "Dharma" which, he insists, is a sure aid to a fuller understanding of Shashi Tharoor's *The*

Great Indian Novel. In his brilliant though brief essay, "Rushdie and Revivalism," R.K. Kaul, a critic known for his fortnight critical assertions, talks not only about *The Moor's Last Sigh* but also about Rushdie's other novels. He rightly calls Rushdie an ebullient genius comparable to Rabelais and Swift and describes *Midnight's Children* as "perhaps the most durable of Rusdhie's works so far." One only wishes he had elaborated on how Rusdhie "mixes fact and fiction inextricably" in the novels he rapidly comments upon.

P. Dayal's essay on *Midnight's Children* which is more descriptive than critical, and more repetitive than revealing, barely escapes being simplistic.

Sudha Iyer believes that tolerance is not merely a negative virtue as Forster would have us believe; it has its positive aspect also; ".....it is the source of spiritual strength which is life-sustaining and leads to understanding and forgiveness. Its opposite, intolerance, leads to impatience, anger, violence, revenge and finally to self-destruction," and goes on to argue, neatly and convincingly, how Kamala Markandaya exemplifies this in

her fiction. The essay is easily an excellent introduction to Kamala Markandaya. Usha Bande's essay on Shashi Deshpande's *A Matter of Time* is short but pointed and gives an impassioned analysis of the novel in the light of new woman-centred psychology. Further, Rita N. Keshari has done a perceptive comparative (and contrastive) study of the theme of racial discrimination in John Masters' *Bhowani Junction* and Manorama Mathai's *Mulligatawny Soup*.

Mitali De Sarkar and R.K. Singh's essay on Sarala Barnabas is welcome, if for nothing else, as it discusses a relatively little known novelist who is described as "a progressive humanist". Atma Ram and Usha Bande's close textual analysis of four Indian English short stories from the perspective of three different facets of tolerance is a well-planned and neatly-executed critical endeavour worthy of emulation by our younger critics.

We then have, almost as a contrast, Tejinder Kaur's not so very successful critical endeavour with Shobha De's short stories in *Small Betrayals*.

Satish Aikant's essay is an insightful analysis and interpretation of some of Sahgal's novels in the light of the tradition-modernity syndrome.

R.P. Chaddah's essay on Namita Gokhale's fiction does

*Founder-editor of *JIWE* and Director of *NIRIEL* at 4-29 Jayanagar, Gulbarga-585 105.

hardy credit to himself or the editor.

Full of illustrative diagrams which reveal the author's close of the texts, Barche's essay on *Inside the Haveli* and *The Nowhere Man* appears, like Dayal's, to have been expressly tailored with difficulty to the editor's stipulation.

Sudipta's essay serves as an impassioned and illuminating critical introduction to Christine Mangala's *The Firewalkers*, a novel that deserves to be known better.

We have R.K. Singh again. His essay on Stephen Gill, an Indian writer living in Canada, is important particularly because he seems to have been unjustly neglected by our academics.

Partha Kumar Mukhopadhyay argues that the central theme of both *Nectar in a Sieve* and *Train to Pakistan* is the efficacy of love, sacrifice, and tolerance in the face of brute forces of nature and man.

Even if one does not totally agree with all of R.S. Tiwary's arguments (say, for instance, that Madeline is the greatest embodiment of tolerance whereas Ramaswamy represents the reverse of it), one would easily concede that he has come out with a scholarly essay on *The Serpent and the Rope*.

Raghuvansh Mani's impressive analysis and interpretation of *The Cat and Shakespeare* which, according to him, "takes the theme of corruption and metaphysics in one stride" and "dia-

lectically with philosophy and life at the same time, and in a...narrative from at once chatty and comic," is an noteworthy contribution.

R.K. Narayan's *The Guide* has lent itself to various interpretations and M.A. Rizvi gives one more here. He selects a few characters and highlights how they practise tolerance. Of course, not all are likely to agree with him when he says that Narayan is "a seer who is committed to improving the society...."

The volume ends with a perceptive analysis of the "silences" that are to be found in Shashi Deshpande's *That Long Silence*. P.P. Raveendran writes, as is his wont, with perception and confidence.

The conclusion is clear enough. Barring a few essays which are dull and jejune, the volume under review is a welcome addition to the fast-growing corpus of works of critical essays on Indian English literature. □

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Franchising of Universities — To Promote Business or Education?

This is with reference to the article "Indian Universities — Now into Franchising", by Ashish Kumar (*University News*, October 11). The system of franchising was first introduced by private computer training institutions to expand their "training business". Several public sector undertaking such as CMC Ltd., ET&T have now joined the race to market their computer and IT courses through franchising. The Indira Gandhi National Open University introduced a kind of franchising system called Partner for Advanced Learning System (PALS) to accord partnership status to selected institutions to offer its courses. Study centres, as distinct from the franchised outfits, are established by the university schools or institutes of correspondence courses to arrange for contact classes to guide students and to provide such facilities as library service and educational video screening. The study centres, to begin with, were generally located within the territorial jurisdiction of the concerned university but later started spreading to areas outside of it and then to other states if sufficient number of students enrol for the courses. By and large, many university authorities perceive the correspondence schools as steady sources of additional revenue without mak-

ing any substantial investments. The university, therefore started spreading their nets, far and wide, to catch as many students as possible from all parts of the country. This explains the mushroom growth of franchised centres for marketing the correspondence courses. And franchising does not involve investments but ensures returns. Three universities which perhaps lead in the franchising business are Guru Ghasidas University (Bilaspur), Makhanlal Chaturvedi Rashtriya Patrakartia Vishwavidyalaya (Bhopal) and Barkatullah Vishwavidyalaya (Bhopal). The University Acts generally specify their respective jurisdictions for the purpose of affiliating colleges. Whether establishment of study centres and appointment of franchisees outside the university jurisdiction violate this provision is not clear. What, however, is most disturbing is the misleading advertisements published by the franchisees in leading newspapers. The franchisees of Guru Ghasidas University, for example, describe their outfits variously as "affiliated to GG University", "affiliated Centres", "approved Centres", authorised study Centres", "approved study and examination Centres". Recently, the university has entered into franchising arrange-

ment, in a big way, with the Zed Career Academy. The headline of one of the display advertisements issued by the Academy reads "Zee Education and Ghasidas University (MP) jointly offers (sic) you Degree courses in BBA/ BCA". The advertisements focus more on the status of the University by emphasising that it is "recognised by the UGC, Government of India and all Union States (sic), member of Association of Commonwealth Universities, London". While most of the franchisees offer BCA and BBA courses which seem to have many takers, they also include in the advertisements their own courses, giving the impression that those are also university courses. The franchisees of the GG University, in turn, appoint sub-franchisees.

The avowed objective of Makhanlal Chaturvedi Patrakartia Vishwavidyalaya is to "develop a national centre of teaching, training and research of Journalism and Mass Communication in Hindi; conduct short term degree and postgraduate courses; develop appropriate technology software for rural and tribal communication through research, training and publication, etc." Perhaps, in order to develop "appropriate technology software", it has taken recourse to franchising indiscriminately the BCA course all over India! One of its franchisees in Hyderabad issued an advertisement for BCA saying that it is approved by the

"Bhopal University". The actual name of the University appears below in small print. The advertiser also says that it is a "regular" course and not under the "correspondence scheme". The Vishwavidyalaya even had permitted the Indian Institute of Ecology and Environment located in New Delhi to offer correspondence courses leading to the awards of Master of Environmental Communication and Master of Ecology and Environment. This Institute used to offer a two-year postgraduate diploma course in ecology and environment through correspondence. Whether the tie-up for the Master's degree courses still continues is not known, but recently the Institute again advertised its two-year diploma course.

Barkatullah University has tied up with the National Institute of Management and Technology to jointly franchise all its correspondence courses throughout India. The cost of establishing a franchised Centre, according to its recent advertisements, is Rs. 8 - 10 lakh. Like the M L C Patrakarita Vishwavidyalaya, this university also had permitted the P R T Institute of Postgraduate Environmental Education and Research, a sister organisation of the India Institute of Ecology and Environment, to offer two correspondence courses — Master of Disaster Control and Master of Sustainable Development.

These universities are doing great harm to the very cause of distance education by franchising their course on a mass scale. What kind of quality control can they exercise over the

franchisees is any body's guess. The success of distance education rests, among others, on four major factors : (1) high quality and well structured instructional material both in prints and electronic media; (ii) distance learning technologies based on new communication and information technologies; (iii) continuous evaluation of the achievements of students; and (iv) guidance and counselling at study centres. Most of the schools of correspondence are deficient in all these aspects. Except for a couple of open universities, hardly any school uses even the most rudimentary form of distance learning technology.

It is not clear whether the Distance Education Council (DEC) constituted by the Indira Gandhi National Open University has the necessary authority to regulate the correspondence courses and take the deviants to

task. Nevertheless, it is high time that the UGC looks into the entire system of franchising and granting recognition to correspondence courses offered by other institutions. The franchising centres actually coach students for the university examinations. This is not distance education. Why not they be permitted to appear in examinations as external candidates. Perhaps it is now necessary to examine whether the universities should at all continue to run their correspondence schools. Instead, each State may establish a separate Open University to offer meaningful programmes. If necessary, the DEC may be given the necessary statutory power to regulate distance education programmes.

A.K. Dasgupta
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College Libraries

This is with reference to the article, "Knowledge Communication in College Libraries : Impediments and Expedients" by S.P. Pawar & M.M. Ali (*University News*, November 15, 1999).

Pawar & Ali have brought out the real picture of the College Library. But, one thing they forgot to mention and survey about is return of books by the staff members and students. Normally, when a book has been charged, it bears the due date of return too. But, no staff or student will bother about return of book on said date, inspite of requests and levy of overdue charges. This attitude goes

against the spirit of all the Library Science Laws.

Secondly, UGC is interested in automating the college libraries. The state or the private institutions are least bothered. In this scenario, UGC's assistance, i.e. to procure one PC along with peripherals, is not maintainable to have LAN facility which is must for OPAC and for other house-keeping operations of the Library.

I.N. Kumbar
Sg. Librarian,
Shri Kadasiddheshwar Arts
College & H.S. Kotambri,
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THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities (October-November 1999)

HUMANITIES

Geography

1. Dahiwale, Suswir Jaideo. **Geographical study of Lasalgaon as an evolving urban centre.** (Prof V H Deodhar), Department of Geography, Nagpur University, Nagpur.
2. Ramthara, R. **Socio-economic impact of village grouping in Mizoram : A geographical analysis.** (Dr B S Mipun), Department of Geography, North Eastern Hill University, Shillong.

History

1. Gopinath, Ravindran. **Aspects of the agrarian economy of Malabar : Mid 19th century upto the end of the Second World War.** (Prof S Bhattacharya), Centre for Historical Studies, Jawaharlal Nehru University, New Delhi.
2. Lochan, Kanjiv. **Medicine and society in Ancient India, down to the close of 3rd century A D.** (Prof B D Chattopadhyaya), Centre for Historical Studies, Jawaharlal Nehru University, New Delhi.
3. Mitra, Santosh Kumar. **The Prachi River-Valley : A study in religion, arts and architecture.** (Prof S P Pani), Department of History, Utkal University, Bhubaneswar.
4. Pagey, Vaijayanti V. **Bhandara Jilhyacha shaikshanik itihas, isvi 1947 te isvi 1958 tyache samajik va arthik parinam : Ek aitihasik adhava.** (Dr K A Shete), Department of History, Nagpur University, Nagpur.
5. Ranjan, Purnendu. **Kabirpanth in Mithila.** (Prof Kunal Chakrabarti), Centre for Historical Studies, Jawaharlal Nehru University, New Delhi.
6. Shukla, Deepa. **Madhya Prant mein 1857 ka vidroh : Ek aitihasik anusheelan.** (Dr Manjula Sharma), Department of History, Barkatullah Vishwavidyalaya, Bhopal.
7. Sudharshan, V A study on tourism aspects of Buddhist monuments of Andhra Pradesh. (Dr M Radha Krishna), Department of Ancient Indian History, Culture and Archaeology, Osmania University, Hyderabad
8. Tamphasana, Rajkumari. **Zeliangrong Naga movement, 1927-1980 : A study in some aspects of ethnic process in North-East India.** (Prof Gangmumei Kamei), Department of History, Manipur University, Imphal.

Language & Literature

Assamese

1. Goswami, Dilip Kumar. **The Kalika Purana : A literary study.** (Dr Malinee Goswami), Department of Assamese, Gauhati University, Guwahati.
2. Goswami, Manju. **Phani Sarma : Jivan aru sahitya karma.** (Prof S Bharali), Department of Assamese, Gauhati University, Guwahati.

English

1. Adhikary, Srimoy Das. **Paul Scott's Raj Quartet : A study.** (Prof Haladhar Panda), Department of English, Sambalpur University, Jyoti Vihar, Beria.
2. Narendra Kumar, V L V N. **Select Parsee fiction in English : A thematic study.** (Dr M Madhusudhana Rao), Department of English, Nagarjuna University, Nagarjunanagar.
3. Prasanna Sree, S. **Woman in the novels of Shashi Deshpande : A study.** (Dr T Asoka Rani), Department of English, Sri Padmavati Mahila Visvavidyalayam, Tirupati.
4. Ramanathan, Indumati. **Frazer, Jung, Frye and the Myth of Criticisms of Ulysses : A critique.** (Prof S V Pradhan), Department of English, Central Institute of English and Foreign Languages, Hyderabad.
5. Samuel, Bandi. **Victim as optimist : A study of Saul Bellow's novels.** (Prof M S Rama Murty), Department of English, Andhra University, Waltair.
6. Yellaiah, J. **The fiction of Arun Joshi : A study in identity crisis.** (Prof A Jaganmohana Chari), Department of English, Kakatiya University, Warangal.

Gujarati

1. Makwana, Kesharhai Masribhai. **Gramjivan ni sathottari Gujarati naval : Laghunaval kathaon vivachnatmak abhyas.** (Dr Vinod Joshi), Department of Gujarati, Bhavnagar University, Bhavnagar.

Hindi

1. Appa Rao, Malla Rama. **Dr Dharam Veer Bharati kee kavya chetana aur mulya sankalp.** (Dr Y Lakshmi Prasad), Department of Hindi, Andhra University, Waltair.
2. Chandarana, Anjani Bhagwanji. **San 1981 se san 1990 tak ka Hindi vyayga.** (Dr S S Majithia), Department of Hindi, Bhavnagar University, Bhavnagar.
3. Jalan, Ramesh Kumar. **Hasya vyayakar Kaka Hathras : An analytical study.** (Prof D Tiwari), Department of Hindi, Gauhati University, Guwahati.
4. Rathore, Gyan. **Arya Samaj kee patra patrikayen aur unka Hindi bhasha aur sahitya ko den.** (Dr Devi Singh Rathore), Department of Hindi, Barkatullah Vishwavidyalaya, Bhopal.
5. Shaju, T P. **Rangey Raghav ke ithasik upanyason ka visleshanatmak adhyayan.** (Dr A Aravindakshan), Department of Hindi, Cochin University of Science and Technology, Kochi.
6. Thakur, Shiv Kumar Singh. **Dr Shiv Prasad Singh ke upanyason mein jeewan mulyon ka chitr : Ek sameekshatnak adhyayan.** (Dr Sushila Dubey), Department of Hindi, Rani Durgavati Vishwavidyalaya, Jabalpur.

Kannada

1. Mallappa, A B. **A linguistic study of Kuruba dialect of**

Bellary District. (Dr William Madtha), Department of Linguistics, Karnataka University, Dharwad.

Marathi

1. Bhandarkar, Padmini Purushottam. **Kavivarya Balkaran Bhagwant Borbar yanchi Marathi kavita : Ek chikitsak abhyas.** (Dr Malti Patil), Department of Marathi, Nagpur University, Nagpur

Oriya

1. Mahanta, Bhubaneswar. **Swadhinottar Oriya upanyasare shreni chetana.** (Dr Adikanda Sahoo), Department of Oriya, Sambalpur University, Jyoti Vihar, Burla

Persian

1. Md Sabir Ali. **Conflict contradiction and uncertainty in modern Persian poetry.** (Dr S A Hasan), Centre for Persian and Central Asian Studies, Jawaharlal Nehru University, New Delhi.

Sanskrit

1. Kar, Gangadhar. **A critical study of Harsa : A dramatist.** (Dr Dinabandhu Kar), Department of Sanskrit, Sambalpur University, Jyoti Vihar, Burla.

2. Sharma, Ram Naresh. **Mahabharat mein varnit Satya ka swarup.** (Dr O P Harsh), Department of Sanskrit, Barkatullah Vishwavidyalaya, Bhopal

Telugu

1. Appala Naidu, D Tirupati Venkata kavula geeratamu :

Oka pariseelana. (Dr P Subba Rao), Department of Telugu, Andhra University, Waltair.

2. Bapi Reddy, M. **Stree vada kavitvamu - samgrah pariseelana.** (Prof P Subba Rao), Department of Telugu, Andhra University, Waltair.

3. Chandrasekhara Rao, A. **A descriptive grammar of Sora language of Srikakulam District.** (Dr K Satyavathi), Department of Telugu, Andhra University, Waltair.

4. Mohini Krishna, V. **Telugu jateeyalu bhasha pariseelana.** (Dr M Vijayalakshmi), Department of Telugu, Sri Padmavati Mahila Visvavidyalayam, Tirupati.

5. Narayana Rao, Singupuram. **Tekkali taluka gramanamalu.** (Prof Y Balagangadhara Rao), Department of Telugu, Nagarjuna University, Nagarjunanagar.

6. Yellaiah, G K Chiranjeevi navalalu : **Oka pariseelana.** (Dr N Swamy), Department of Telugu, Osmania University, Hyderabad

Urdu

1. Jamal, Firdos **Urdu shairi mein Hindustani anasir.** (Dr Aziz Indori), Department of Urdu, Devi Ahilya Vishwavidyalaya, Indore.

Philosophy

1. Agnihotri, Rajeev **Kabir ke chintan mein manav mulya.** (Dr Vimla Guru), Department of Philosophy, Barkatullah Vishwavidyalaya, Bhopal.

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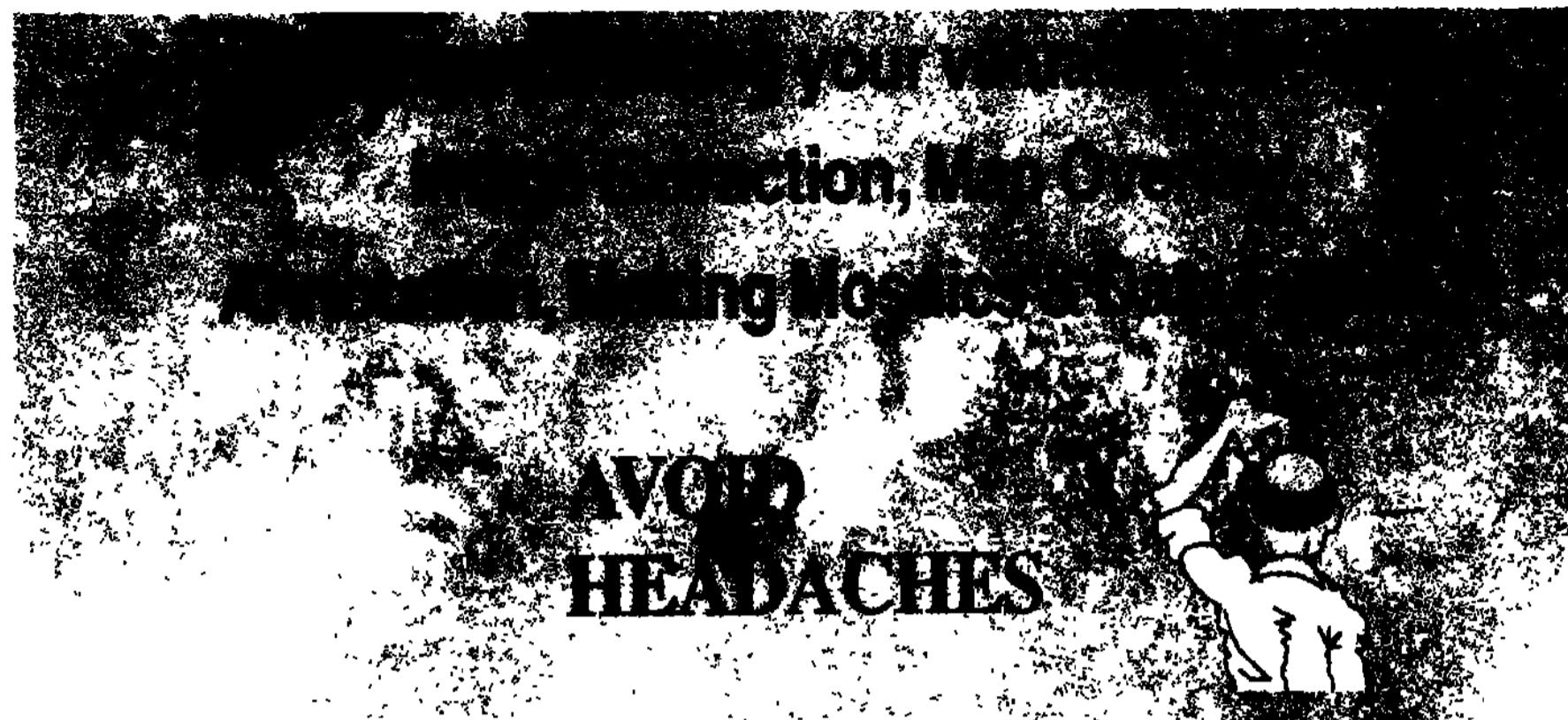
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9	Rabindranath Tagore M.I.L. Professor		1	

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21.	Reader	Biotechnology	2	<p>Essential Qualifications : Consistently good academic record. Master's degree in Biotechnology/Microbiology/Biological Sciences, Ph.D. in related fields. (a) Desirable Specialization and/or experience in Industrial Microbiology/Food Technology as evidenced by Teaching or Research and Publications. (b) Desirable : Specialization and/or experience in Plant/Animal Genetic Engineering as evidenced by Teaching or Research and Publications</p>
22.	Lecturer	Biotechnology	2	<p>Essential Qualifications : Consistently good academic record. M.Sc. Degree in Biotechnology/Microbiology/Bio-chemistry. (a) Desirable-Specialization and/or experience in Plant Molecular Biology/Biotechnology as evidenced by Teaching or Research & Publications.</p>

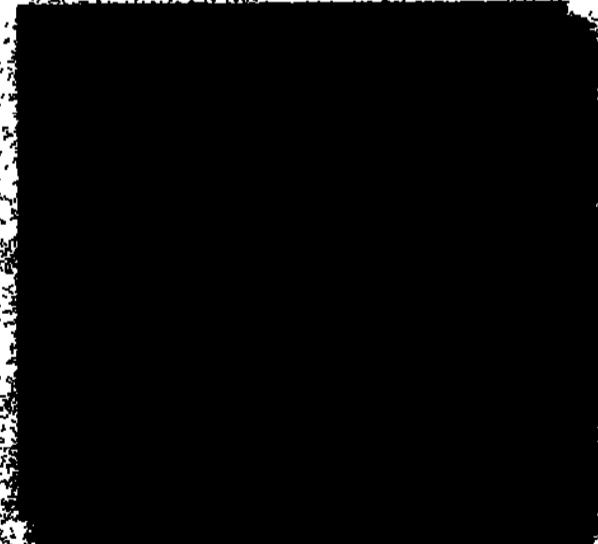
1	2	3	4	5
				<p>(b) Desirable-Specialization and/or experience in Microbiology/ Immunology as evidenced by Teaching or Research and publications.</p>
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				<p>(b) Mycology and Plant Pathology</p>
24.	Lecturer	Botany	2	<p>(a) Angiosperma Taxonomy.</p>
				<p>(b) Plant Physiology and Biochemistry</p>
25.	Reader	Chemistry	1	<p>Specialization : Physical Chemistry</p>
				<p>Essential Qualification : M.Sc. in Chemistry, Doctorate degree, Postgraduate teaching experience. Actively engaged in research as evidenced by publications in referred National and International Journals.</p>
26.	Lecturer	Chemistry	1	<p>Specialization : Inorganic Chemistry.</p>
				<p>Essential Qualification : M.Sc. in Chemistry, Doctorate Degree. Actively engaged in research as evidenced by publications in referred National & International Journals.</p>
27.	Professor	Computer Sc.	1	<p>Open</p>
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				<p>Specialization/Experience : Economic Geology with postgraduate teaching experience.</p>
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32.	Lecturer	Physics	3	<p>a) Spectroscopy</p>
				<p>b) Spectroscopy</p>
				<p>c) Nuclear Physics</p>
33.	Professor	Statistics	2	<p>Open</p>
34.	Reader	Statistics	1	<p>Multivariate Analysis and Computer Programming.</p>
				<p>Desirable Qualification : Familiarity with application Software, Object Oriented Programming and C++ and Computational Mathematics.</p>



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